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=> file biosis caba caplus embase japio lifesci medline scisearch uspatfull
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CA INDEXING COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

=> e becker robert s/au
E1          31     BECKER ROBERT R/AU
E2           6     BECKER ROBERT RICHARD/AU
E3          51 --> BECKER ROBERT S/AU
E4           1     BECKER ROBERT SIDNEY/AU
E5           2     BECKER ROBERT STEVEN/AU
E6          19     BECKER ROBERT W/AU
E7           1     BECKER ROBERTO/AU
E8           3     BECKER ROBIN D/AU
E9           1     BECKER ROBT J/AU
E10         19     BECKER ROBYN E/AU
E11          1     BECKER ROD/AU
E12          1     BECKER RODNEY P/AU

=> s e3-e5 and pneumoco?
L1          21 ("BECKER ROBERT S"/AU OR "BECKER ROBERT SIDNEY"/AU OR "BECKER
               ROBERT STEVEN"/AU) AND PNEUMOCO?

=> dup rem l1
PROCESSING COMPLETED FOR L1
L2           15 DUP REM L1 (6 DUPLICATES REMOVED)

=> d bib ab 1-
YOU HAVE REQUESTED DATA FROM 15 ANSWERS - CONTINUE? Y/(N):y

L2   ANSWER 1 OF 15  USPATFULL on STN
AN     2005:197200  USPATFULL
TI     Expression of lipoproteins
IN     Huebner, Robert C., Stroudsburg, PA, UNITED STATES
       Erdile, Lorne F., Stroudsburg, PA, UNITED STATES
       Warakomski, Donald J. JR., Tannersville, PA, UNITED STATES
         Becker, Robert S., Henryville, PA, UNITED STATES
       Gray, Maryann B., Bartonsville, PA, UNITED STATES
       Pyle, Derek J., East Stroudsburg, PA, UNITED STATES
PI     US 2005171343      A1   20050804
AI     US 2003-359435     A1   20030206 (10)
RLI    Division of Ser. No. US 1998-67453, filed on 28 Apr 1998, GRANTED, Pat.
       No. US 6538118 Continuation of Ser. No. US 1995-475781, filed on 7 Jun
```

1995, ABANDONED
DT Utility
FS APPLICATION
LREP Patrick J. Halloran, Aventis Pasteur Inc., Intellectual Property - Knerr Building, One Discovery Drive, Swiftwater, PA, 18370, US
CLMN Number of Claims: 78
ECL Exemplary Claim: 1
DRWN 15 Drawing Page(s)
LN.CNT 1596
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Heterologous lipidated proteins formed recombinantly are disclosed and claimed. The expression system can be E. coli. The heterologous lipidated protein has a leader sequence which does not naturally occur with the protein portion of the lipidated protein. The lipidated protein can have the Borrelia OspA leader sequence. The protein portion can be OspC, PspA, UreA, Ure B, or a fragment thereof. Methods and compositions for forming and employing the proteins are also disclosed and claimed.

L2 ANSWER 2 OF 15 USPATFULL on STN
AN 2004:88268 USPATFULL
TI Strain selection of **pneumococcal** surface proteins
IN **Becker, Robert S.**, Henryville, PA, UNITED STATES
Briles, David E., Birmingham, AL, UNITED STATES
Hollingshead, Susan, Birmingham, AL, UNITED STATES
PI US 2004067237 A1 20040408
AI US 2003-674755 A1 20030930 (10)
RLI Continuation of Ser. No. US 1999-147875, filed on 24 May 1999, GRANTED, Pat. No. US 6638516 A 371 of International Ser. No. WO 1997-US16761, filed on 22 Sep 1997, PENDING Continuation-in-part of Ser. No. US 1996-710749, filed on 20 Sep 1996, GRANTED, Pat. No. US 5955089
DT Utility
FS APPLICATION
LREP Nixon Peabody LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051
CLMN Number of Claims: 34
ECL Exemplary Claim: 1
DRWN 10 Drawing Page(s)
LN.CNT 1826
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to vaccine composition(s) comprising at least two PspAs from strains selected from at least one family, the family being defined by PspAs from strains belonging to the family having greater than or equal to 50% homology in aligned sequences of a C-terminal region of an alpha helical region of PspA. Additionally, the families are further comprised of clades, wherein PspAs from strains which belong to a clade exhibit at least 75% sequence homology in aligned sequences of the C-terminal region of the alpha helix of PspA. Vaccine compositions of the present invention preferably comprise a minimum of 4 and a maximum of 6 strains representing a single clade each, and the at least two PspAs are optionally serologically or broadly cross-reactive.

L2 ANSWER 3 OF 15 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
DUPLICATE 1
AN 2003:549966 BIOSIS
DN PREV200300550214
TI Strain selection of **pneumococcal** surface proteins.
AU **Becker, Robert S.** [Inventor, Reprint Author]; Briles, David E. [Inventor]; Hollingshead, Susan [Inventor]
CS ASSIGNEE: The UAB Research Foundation
PI US 6638516 20031028
SO Official Gazette of the United States Patent and Trademark Office Patents, (Oct 28 2003) Vol. 1275, No. 4. http://www.uspto.gov/web/menu/patdata.html . e-file.
ISSN: 0098-1133 (ISSN print).
DT Patent
LA English
ED Entered STN: 19 Nov 2003
Last Updated on STN: 19 Nov 2003

AB The present invention relates to vaccine composition(s) comprising at least two PspAs from strains selected from at least one family, the family being defined by PspAs from strains belonging to the family having greater than or equal to 50% homology in aligned sequences of a C-terminal region of an alpha helical region of PspA. Additionally, the families are further comprised of clades, wherein PspAs from strains which belong to a clade exhibit at least 75% sequence homology in aligned sequences of the C-terminal region of the alpha helix of PspA. Vaccine compositions of the present invention preferably comprise a minimum of 4 and a maximum of 6 strains representing a single clade each, and the at least two PspAs are optionally serologically or broadly cross-reactive.

L2 ANSWER 4 OF 15 USPATFULL on STN
AN 2003:81804 USPATFULL
TI Expression of lipoproteins
IN Huebner, Robert C., Stroudsburg, PA, United States
Erdile, Lorne F., Stroudsburg, PA, United States
Warakomski, Jr., Donald J., Tannersville, PA, United States
Becker, Robert S., Henryville, PA, United States
Gray, Maryann B., Bartonsville, PA, United States
Pyle, Derek J., East Stroudsburg, PA, United States
PA Connaught Laboratories, Inc., Swiftwater, PA, United States (U.S. corporation)
PI US 6538118 B1 20030325
AI US 1998-67453 19980428 (9)
RLI Continuation of Ser. No. US 1995-475781, filed on 7 Jun 1995, now abandoned
DT Utility
FS GRANTED
EXNAM Primary Examiner: Minnifield, Nita
LREP Halloran, Patrick J.
CLMN Number of Claims: 10
ECL Exemplary Claim: 1
DRWN 15 Drawing Figure(s); 15 Drawing Page(s)
LN.CNT 1389
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Heterologous lipidated proteins formed recombinantly are disclosed and claimed. The expression system can be E. coli. The heterologous lipidated protein has a leader sequence which does not naturally occur with the protein portion of the lipidated protein. The lipidated protein can have the Borrelia OspA leader sequence. The protein portion can be OspC, PspA, UreA, Ure B, or a fragment thereof. Methods and compositions for forming and employing the proteins are also disclosed and claimed.

L2 ANSWER 5 OF 15 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2
AN 2002:327825 CAPLUS
DN 136:354176
TI Application of lipoproteins to improving the immunological response to vaccination
IN **Becker, Robert S.**; Huebner, Robert C.; Gray, Maryann; Biscardi, Karen S.; Erdile, Lorne F.; Guy, Bruno
PA Connaught Laboratories, Inc., USA
SO U.S., 23 pp., Cont.-in-part of U.S. 6,251,405.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6379675	B1	20020430	US 1996-588621	19960119
	US 6251405	B1	20010626	US 1995-476656	19950607
	CA 2223041	AA	19961219	CA 1996-2223041	19960605
	WO 9640290	A1	19961219	WO 1996-US8866	19960605
	W: AU, CA, FI, JP, NO				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	AU 9661519	A1	19961230	AU 1996-61519	19960605
	AU 717890	B2	20000406		
	EP 831937	A1	19980401	EP 1996-919085	19960605
	EP 831937	B1	20030917		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI

	JP 11510370	T2	19990914	JP 1996-501336	19960605
	AT 249844	E	20031015	AT 1996-919085	19960605
	ZA 9604894	A	19970224	ZA 1996-4894	19960607
	NO 9705620	A	19980204	NO 1997-5620	19971204
	FI 9704423	A	19980204	FI 1997-4423	19971205
	US 2002131983	A1	20020919	US 2002-96687	20020312
	US 6984385	B2	20060110		
PRAI	US 1995-476656	A2	19950607		
	US 1996-588621	A	19960119		
	WO 1996-US8866	W	19960605		

AB The authors disclose the use of natural and recombinant lipoproteins for enhancing the immunol. response to vaccines. The vaccines contain at least one antigen and at least one lipoprotein and optionally an adjuvant. The lipoprotein can itself be antigenic or immunogenic. In one example, the hemagglutination-inhibition antibody titer to influenza A virus was enhanced by a fusion lipoprotein of **pneumococcal** PspA and the Borrelia OspA leader peptide.

RE.CNT 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 6 OF 15 USPATFULL on STN
AN 2002:242802 USPATFULL
TI Immunological combination compositions and methods
IN **Becker, Robert S.**, Henryville, PA, UNITED STATES
Huebner, Robert C., Stroudsburg, PA, UNITED STATES
Gray, Maryann, Bartonsville, PA, UNITED STATES
Biscardi, Karen S., South Sterling, PA, UNITED STATES
Erdile, Lorne F., Tassin La Demi Lune, FRANCE
Guy, Bruno, Lyon, FRANCE

PI	US 2002131983	A1	20020919
	US 6984385	B2	20060110
AI	US 2002-96687	A1	20020312 (10)

RLI Continuation of Ser. No. US 1996-588621, filed on 19 Jan 1996, GRANTED, Pat. No. US 6379675 Continuation-in-part of Ser. No. US 1995-476656, filed on 7 Jun 1995, GRANTED, Pat. No. US 6251405
DT Utility
FS APPLICATION
LREP Patrick J. Halloran, Aventis Pasteur, Inc., Intellectual Property - Knerr Building, One Discovery Drive, Swiftwater, PA, 18370
CLMN Number of Claims: 43
ECL Exemplary Claim: 1
DRWN 5 Drawing Page(s)
LN.CNT 1605
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Immunological compositions and methods for making and using them. The compositions contain at least one antigen and at least one lipoprotein and optionally an adjuvant. The lipoprotein can itself be antigenic or immunogenic. The antigen can be influenza HA and the lipoprotein a recombinantly expressed product having an OspA leader for lipidation and PspA for the protein portion. The antigen can be OspC and the lipoprotein OspA. The components of the composition are co-administered. A potentiated immunological response is obtained by the compositions and methods.

L2 ANSWER 7 OF 15 USPATFULL on STN
AN 2001:97430 USPATFULL
TI Immunological combination compositions and methods
IN **Becker, Robert S.**, Henryville, PA, United States
Huebner, Robert C., Stroudsburg, PA, United States
Gray, Maryann B., Bartonsville, PA, United States
Biscardi, Karen S., South Sterling, PA, United States
PA Connaught Laboratories, Inc., Swiftwater, PA, United States (U.S. corporation)

PI	US 6251405	B1	20010626
AI	US 1995-476656		19950607 (8)

DT Utility
FS GRANTED

EXNAM Primary Examiner: Swart, Rodney P.
LREP McDonnell Boehnen Hulbert & Berghoff
CLMN Number of Claims: 11
ECL Exemplary Claim: 1
DRWN 2 Drawing Figure(s); 2 Drawing Page(s)
LN.CNT 1274
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Immunological compositions and methods for making and using them. The compositions contain an antigen and a lipoprotein and optionally an adjuvant. The lipoprotein can itself be antigenic or immurogenic. The antigen can be influenza HA and the lipoprotein a recombinantly expressed product having an OspA leader for lipidation and PspA for the protein portion. The antigen can be OspC and the lipoprotein OspA. The components of the composition are co-administered. A potentiated immunological response is obtained by the compositions and methods.

L2 ANSWER 8 OF 15 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
DUPLICATE 3
AN 2001:467397 BIOSIS
DN PREV200100467397
TI Characterization of selected strains of **pneumococcal** surface protein A.
AU Jedrzejas, Mark J. [Reprint author]; Lamani, Ejvis; **Becker, Robert S.**
CS Children's Hospital Oakland Research Institute, 5700 Martin Luther King Jr. Way, Oakland, CA, 94609-1673, USA
mjedrzejas@chori.org
SO Journal of Biological Chemistry, (August 31, 2001) Vol. 276, No. 35, pp. 33121-33128. print.
CODEN: JBCHA3. ISSN: 0021-9258.
DT Article
LA English
ED Entered STN: 3 Oct 2001
Last Updated on STN: 23 Feb 2002
AB Several proteins, in addition to the polysaccharide capsule, have recently been implicated in the full virulence of the Streptococcus pneumoniae bacterial pathogen. One of these novel virulence factors of S. pneumoniae is **pneumococcal** surface protein A (PspA). The N-terminal, cell surface exposed, and functional part of PspA is essential for full **pneumococcal** virulence, as evidenced by the fact that antibodies raised against this part of the protein are protective against **pneumococcal** infections. PspA has recently been implicated in anti-complementary function as it reduces complement-mediated clearance and phagocytosis of **pneumococci**. Several recombinant N-terminal fragments of PspA from different strains of **pneumococci**, Rx1, BG9739, BG6380, EF3296, and EF5668, were analyzed using circular dichroism, analytical ultracentrifugation sedimentation velocity and equilibrium methods, and sequence homology. Uniformly, all strains of PspA molecules studied have a high alpha-helical secondary structure content and they adopt predominantly a coiled-coil structure with an elongated, likely rod-like shape. No beta-sheet structures were detected for any of the PspA molecules analyzed. All PspAs were found to be monomeric in solution with the exception of the BG9739 strain which had the propensity to partially aggregate but only into a tetrameric form. These structural properties were correlated with the functional, anti-complementary properties of PspA molecules based on the polar distribution of highly charged termini of its coiled-coil domain. The recombinant Rx1 PspA is currently under consideration for **pneumococcal** vaccine development.

L2 ANSWER 9 OF 15 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
DUPLICATE 4
AN 2000:174346 BIOSIS
DN PREV200000174346
TI Immunization of healthy adults with a single recombinant **pneumococcal** surface protein A (PspA) variant stimulates broadly cross-reactive antibodies to heterologous PspA molecules.
AU Nabors, Gary S. [Reprint author]; Braun, Patricia A.; Herrmann, Diane J.; Heise, Martha L.; Pyle, Derek J.; Gravenstein, Stefan; Schilling, Margot;

Ferguson, Laura M.; Hollingshead, Susan K.; Briles, David E.; **Becker, Robert S.**

CS Aventis Pasteur, Discovery Drive, Swiftwater, PA, 18370, USA

SO Vaccine, (March 6, 2000) Vol. 18, No. 17, pp. 1743-1754. print.
CODEN: VACCDE. ISSN: 0264-410X.

DT Article

LA English

ED Entered STN: 3 May 2000
Last Updated on STN: 4 Jan 2002

AB **Pneumococcal** surface protein A (PspA) is a highly variable protein found on all strains of **pneumococci**. To be successful, a PspA-based vaccine for S. pneumoniae must induce antibodies that are broadly cross-reactive. To address whether cross-reactive antibodies could be induced in man, we evaluated serum from adults immunized with recombinant clade 2 PspA from strain Rx1. Immunization with 5-125 mug rPspA lead to a significant increase in circulating anti-PspA antibodies, as well as antibodies reactive to heterologous rPspA molecules. Increased binding of post-immune sera to 37 **pneumococcal** strains expressing a variety of PspA and capsule types was observed, versus pre-immune sera. The extent of cross-clade reactivity of human anti-rPspA followed roughly the amount of sequence homology to the non-clade 2 antigens. It is hypothesized that priming of humans by natural exposure to S. pneumoniae contributes to the breadth of the cross-reactivity of antibody to PspA.

L2 ANSWER 10 OF 15 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1998:197416 CAPLUS

DN 128:281705

TI Strain selection of **pneumococcal** surface proteins

IN **Becker, Robert S.**; Briles, David E.; Hollingshead, Susan

PA Connaught Laboratories, Inc., USA; Becker, Robert S.; Briles, David E.; Hollingshead, Susan

SO PCT Int. Appl., 58 pp.
CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 19

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9811915	A1	19980326	WO 1997-US16761	19970922
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	US 5955089	A	19990921	US 1996-710749	19960920
	CA 2267343	AA	19980326	CA 1997-2267343	19970922
	AU 9744287	A1	19980414	AU 1997-44287	19970922
	AU 726927	B2	20001123		
	EP 956043	A1	19991117	EP 1997-942626	19970922
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2000503676	T2	20000328	JP 1998-514944	19970922
	NZ 334811	A	20000929	NZ 1997-334811	19970922
	NO 9901340	A	19990518	NO 1999-1340	19990319
	BR 9908649	A	20011030	BR 1999-8649	19990326
	US 6638516	B1	20031028	US 1999-147875	19990524
	US 2004067237	A1	20040408	US 2003-674755	20030930
PRAI	US 1996-710749	A2	19960920		
	US 1993-48896	B1	19930420		
	US 1995-465746	A2	19950606		
	WO 1997-US16761	W	19970922		
	US 1999-147875	A1	19990524		

AB The present invention relates to vaccine composition(s) comprising at least two PspAs from strains selected from at least one family, the family being defined by PspAs from strains belonging to the family having greater than

or equal to 50 % homol. in aligned sequences of a C-terminal region of an alpha helical region of PspA. Addnl., the families are further comprised of clades, wherein PspAs from strains which belong to a clade exhibit at least 75 % sequence homol. in aligned sequences of the C-terminal region of the alpha helix of PspA. Vaccine compns. of the present invention preferably comprise a min. of 4 and a maximum of 6 strains representing a single clade each, and the at least two PspAs are optionally serol. or broadly cross-reactive.

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 11 OF 15 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 5
AN 1997:169102 CAPLUS
DN 126:211013
TI Test for determining the dose response of a conjugated vaccine
IN **Becker, Robert S.**; Biscardi, Karen; McVerry, Patrick; Ryall, Robert
PA Connaught Laboratories, Inc., USA
SO U.S., 5 pp., Cont. of U. S. Ser. No. 943,171, abandoned.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 5604108	A	19970218	US 1994-253251	19940602
PRAI US 1992-943171	B1	19920914		

AB A method of testing the dose-related immune response of humans to conjugate vaccines comprising diphtheria toxoid as a strongly-immunogenic carrier protein and a capsular polysaccharide of Haemophilus influenzae type b or **pneumococcal** polysaccharide (PRP-D) is claimed. The method comprises administering to a mouse unconjugated diphtheria toxoid in an amount corresponding on a weight-scaled basis to a human dose, simultaneously or subsequently administering a dose of conjugate vaccine, and determining the immune response of the animal to the capsular polysaccharide as a direct measure on a weight-related basis of the immune response of a human, to whom a human dose of the unconjugated carrier protein has been previously or simultaneously administered, to the dosage amount of the conjugated vaccine. When administered alone, **pneumococcal** carbohydrate 19F-diphtheria toxoid conjugate (19F-Dt) vaccine induced an optimal response in mice at a dosage of .apprx. 5 μg/mouse, similar to the dose used for PRP-D alone. A considerable potentiation of anti-19F response was observed with coadministration of diphtheria-tetanus vaccine.

L2 ANSWER 12 OF 15 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 1997:465330 BIOSIS
DN PREV199799764533
TI Recombinant engineering of PspA antigen from Streptococcus pneumoniae as a PAM-3cys-lipidated protein potentiates immunogenicity for both parenteral and mucosal routes of administration.
AU **Becker, Robert S.**; Gray, Mary-Ann L.; Biscardi, Karen S.; Pyle, Derek J.; Huebner, Robert C.; Nabors, Gary S.
CS Connaught Lab. Inc., Swiftwater, PA 18370, USA
SO Brown, F. [Editor]; Burton, D. [Editor]; Doherty, P. [Editor]; Mekalanos, J. [Editor]. Vaccines (Cold Spring Harbor), (1997) pp. 39-44. Vaccines (Cold Spring Harbor); Molecular approaches to the control of infectious diseases.
Publisher: Cold Spring Harbor Laboratory Press, 10 Skyline Drive, Plainview, New York 11803, USA. Series: Vaccines (Cold Spring Harbor).
Meeting Info.: Fourteenth Annual Meeting on Modern Approaches to the Control of Infectious Diseases. Cold Spring Harbor, New York, USA. September 9-13, 1996.
ISSN: 0899-4056. ISBN: 0-87969-516-1.
DT Book; (Book Chapter)
Conference; (Meeting Paper)
LA English
ED Entered STN: 4 Nov 1997
Last Updated on STN: 4 Nov 1997

L2 ANSWER 13 OF 15 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:431949 CAPLUS
DN 127:175081
TI Recombinant engineering of PspA antigen from Streptococcus pneumoniae as a PAM3cys-lipidated protein potentiates immunogenicity for both parenteral and mucosal routes of administration
AU **Becker, Robert S.**; Gray, Mary-Ann L.; Biscardi, Karen S.; Pyle, Derek J.; Huebner, Robert C.; Nabors, Gary S.
CS Connaught Laboratories, Inc., Swiftwater, PA, 18370, USA
SO Vaccines 97: Molecular Approaches to the Control of Infectious Diseases, [Annual Meeting on Modern Approaches to the Control of Infectious Diseases], 14th, Cold Spring Harbor, N. Y., Sept. 9-13, 1996 (1997), Meeting Date 1996, 39-44. Editor(s): Brown, Fred. Publisher: Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N. Y.
CODEN: 64QNAJ
DT Conference
LA English
AB **Pneumococcal** surface protein A (PspA) is a candidate for an improved **pneumococcal** vaccine. The expression of PspA is required for full virulence of **pneumococci** in mouse models. Active and passive immunization with PspA has demonstrated that it can protect mice from i.v. challenge with **pneumococci**. PspA may provide a vaccine that will be broadly efficacious, immunogenic in both infant and adult populations, and contain fewer components than the existing 23-valent **pneumococcal** polysaccharide vaccine.

L2 ANSWER 14 OF 15 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:124481 CAPLUS
DN 126:127880
TI Manufacture of protein conjugates with N-palmitoyl-S-[2,3-bis(palmitoyloxy)-(2RS)-propyl]-(R)-cysteine for use as antigens in bacterial hosts using a Borrelia signal sequence
IN Huebner, Robert C.; Erdile, Lorne F.; Warakomski, Donald J.; **Becker, Robert S.**; Gray, Maryann B.; Pyle, Derek L.
PA Connaught Laboratories, Inc., USA
SO PCT Int. Appl., 72 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 19

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9640718	A1	19961219	WO 1996-IB633	19960605
	W: AU, CA, FI, JP, NO				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	CA 2223300	AA	19961219	CA 1996-2223300	19960605
	AU 9661343	A1	19961230	AU 1996-61343	19960605
	AU 721954	B2	20000720		
	EP 832093	A1	19980401	EP 1996-918793	19960605
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 11514841	T2	19991221	JP 1996-500268	19960605
	ZA 9604896	A	19970108	ZA 1996-4896	19960607
	NO 9705619	A	19980130	NO 1997-5619	19971204
	FI 9704422	A	19980204	FI 1997-4422	19971205
	US 2005171343	A1	20050804	US 2003-359435	20030206
PRAI	US 1995-475781	A	19950607		
	US 1995-486373	A	19950607		
	WO 1996-IB633	W	19960605		
	US 1998-67453	A3	19980428		

AB A method of manufacturing proteins lipidated with Pam3Cys (N-palmitoyl-S-[2,3-bis(palmitoyloxy)-(2RS)-propyl]-(R)-cysteine) in a microbial host such as Escherichia coli is described. The protein is manufactured as a precursor with a leader peptide from the outer surface protein A of Borrelia. Pam3Cys lipidation of peptides greatly increases their antigenicity. Processing of the leader peptide with signal peptidase II leads to lipidation of the N-terminus with Pam3Cys. Preferred targets for lipidation with Pam3Cys are OspC of European isolates of Borrelia burgdorferi, PspA of

Streptococcus pneumoniae, UreA or UreB of Helicobacter pylori, or fragments derived from them. Lipidation of these proteins allows them to be rapidly purified by partition into aqueous Triton X-114 solns. Manufacture of Pam3Cys-lipidated OspC and pspA gene products is demonstrated.

L2 ANSWER 15 OF 15 JAPIO (C) 2006 JPO on STN
AN 2003-002842 JAPIO
TI SCREENING OF STRAIN USING **PNEUMOCOCCAL** SURFACE PROTEIN AND APPLICATION THEREOF
IN **BECKER ROBERT S**; BRILES DAVID E; HOLLINGSHEAD SUSAN
PA UAB RESEARCH FOUNDATION
PI JP 2003002842 A 20030108 Heisei
AI JP 2002-119707 (JP2002119707 Heisei) 19970922
PRAI US 1996-710749 19960920
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2003
AB PROBLEM TO BE SOLVED: To obtain a vaccine composition comprising at least two Psp A proteins derived from strains selected from at least two families.
SOLUTION: This invention is directed to a vaccine composition, or the like, which contains at least two Psp A proteins derived from strains selected from at least one family. The family is defined by that the Psp A proteins derived from strains belonging to a family have homologies of 50% or more between the aligned sequences at the C-terminal regions of their α-helix regions. The family further comprises clades. The Psp A proteins derived from strains belonging to a clade have sequence homologies of 75% or more at the aligned sequences at the C-terminal regions of their α-helix regions. The vaccine composition, or the like, of the invention preferably contains at least four or at the largest six strains each representing a single clade. At least two Psp A proteins contained in the composition are selected arbitrary and have a serological reactivity or a wide cross-reactivity.
COPYRIGHT: (C)2003,JPO

=> e briles david e/au
E1 1 BRILES D E */AU
E2 8 BRILES DAVID/AU
E3 311 --> BRILES DAVID E/AU
E4 1 BRILES DAVID ELWOOD/AU
E5 1 BRILES DAVID F/AU
E6 7 BRILES E/AU
E7 46 BRILES E B/AU
E8 1 BRILES E C/AU
E9 1 BRILES E D/AU
E10 1 BRILES E E/AU
E11 1 BRILES E I/AU
E12 14 BRILES E I B/AU

=> s e1-e4 and pneumoco?
L3 269 ("BRILES D E *"/AU OR "BRILES DAVID"/AU OR "BRILES DAVID E"/AU OR "BRILES DAVID ELWOOD"/AU) AND PNEUMOCO?

=> s l3 and pspa and clade?
L4 23 L3 AND PSPA AND CLADE?

=> dup rem l4
PROCESSING COMPLETED FOR L4
L5 15 DUP REM L4 (8 DUPLICATES REMOVED)

=> d bib ab 1-
YOU HAVE REQUESTED DATA FROM 15 ANSWERS - CONTINUE? Y/(N):y

L5 ANSWER 1 OF 15 MEDLINE on STN
AN 2006046071 IN-PROCESS
DN PubMed ID: 16434715
TI **Pneumococcal** surface protein A (**PspA**) family distribution among clinical isolates from adults over 50 years of age collected in seven countries.
AU Hollingshead Susan K; Baril Laurence; Ferro Santiago; King Janice; Coan

Pat; **Briles David E**
CS Department of Microbiology, University of Alabama at Birmingham, BBRB 658, AL 35294, USA. (Pneumococcal Proteins Epi Study Group).
SO Journal of medical microbiology, (2006 Feb) 55 (Pt 2) 215-21.
Journal code: 0224131. ISSN: 0022-2615.
CY England: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS NONMEDLINE; IN-PROCESS; NONINDEXED; Priority Journals
ED Entered STN: 20060126
Last Updated on STN: 20060214
AB The **pneumococcal** surface protein **PspA**, a cell-wall-associated surface protein, is a promising component for **pneumococcal** vaccines. In this study, the distribution of the **PspA** family was determined in a panel of invasive and clinically important **pneumococcal** isolates from adults over 50 years of age, collected between 1995 and 2002. One thousand eight hundred and forty-seven recent isolates from invasive **pneumococcal** disease were obtained from seven Western countries, together with clinical data. An ELISA-based serological method was standardized in order to determine the **PspA** family and **clade** distribution. Molecular tests were used when isolates were non-typable by ELISA (**PspA** family typing by PCR). Only 42 (2.3 %) isolates were non-typable by ELISA and **PspA** family typing by PCR was performed. Finally, 3 isolates were considered as non-**pneumococcal** and 1844 were classified as follows: 749 (40.6 %) were **PspA** family 1, 1078 (58.5 %) were **PspA** family 2, 13 (0.7 %) were **PspA** family 1 and 2 and 4 (0.2 %) remained non-typable. The cross-reactivity of antibodies to PspAs of different **clades** was confirmed. In conclusion, inclusion of **PspA** family 1 and family 2 in future **pneumococcal** vaccines would ensure broad coverage of **pneumococcal** strains infecting people over 50 years of age.

L5 ANSWER 2 OF 15 USPATFULL on STN
AN 2005:226556 USPATFULL
TI **PNEUMOCOCCAL** SURFACE PROTEIN C (PSPC), EPITOPIC REGIONS AND STRAIN SELECTION THEREOF, AND USES THEREFOR
IN **Briles, David E.**, Birmingham, AL, UNITED STATES
Hollingshead, Susan K., Birmingham, AL, UNITED STATES
Brooks-Walter, Alexis, Birmingham, AL, UNITED STATES
PI US 2005196405 A1 20050908
AI US 2003-341201 A1 20030113 (10)
RLI Continuation of Ser. No. US 2000-748875, filed on 26 Dec 2000, ABANDONED
Division of Ser. No. US 1999-298523, filed on 23 Apr 1999, PENDING
PRAI US 1998-82728P 19980423 (60)
DT Utility
FS APPLICATION
LREP Michael L. Goldman, Esq., NIXON PEABODY LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051, US
CLMN Number of Claims: 10
ECL Exemplary Claim: 1-27
DRWN 50 Drawing Page(s)
LN.CNT 4782
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed and claimed are: epitopic regions of **Pneumococcal** Surface Protein C or "PspC", different **clades** of PspC, isolated and/or purified nucleic acid molecules such as DNA encoding a fragment or portion of PspC such as an epitopic region of PspC or at least one epitope of PspC, uses for such nucleic acid molecules, e.g., to detect the presence of PspC or of S. pneumoniae by detecting a nucleic acid molecule therefor in a sample such as by amplification and/or a polymerase chain reaction, vectors or plasmids which contain and/or express such nucleic acid molecles, e.g., in vitro or in vivo, immunological, immunogenic or vaccine compositions including at least one PspC and/or a portion thereof (such as at least one epitopic region of at least one PspC and/or at least one polypeptide encoding at least one epitope of at least one PspC), either alone or in further combination with at least one second **pneumococcal** antigen, such as at least one different PspC and/or a fragment thereof and/or at

least one **PspA** and/or at least one epitopic region of at least one **PspA** and/or at least one polypeptide including at least one epitope of **PspA**. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approximately the same amounts, as **PspA** . Thus, the invention further provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compositions.

L5 ANSWER 3 OF 15 USPATFULL on STN
AN 2004:101977 USPATFULL
TI **Pneumococcal** genes, portions thereof, expression products therefrom, and uses of such genes, portions and products
IN **Briles, David E.**, Birmingham, AL, UNITED STATES
McDaniel, Larry S., Ridgland, MS, UNITED STATES
Swiatlo, Edwin, Birmington, AL, UNITED STATES
Yother, Janet, Birmingham, AL, UNITED STATES
Crain, Marilyn J., Birmingham, AL, UNITED STATES
Hollingshead, Susan, Birmingham, AL, UNITED STATES
Tart, Rebecca, Benson, NC, UNITED STATES
Brooks-Walter, Alexis, Birmingham, AL, UNITED STATES
PI US 2004077847 A1 20040422
AI US 2002-299636 A1 20021119 (10)
RLI Division of Ser. No. US 1996-714741, filed on 16 Sep 1996, GRANTED, Pat. No. US 6500613 Continuation-in-part of Ser. No. US 1995-529055, filed on 15 Sep 1995, GRANTED, Pat. No. US 6592876 Continuation-in-part of Ser. No. US 1994-226844, filed on 13 Apr 1994, GRANTED, Pat. No. US 5586225 Continuation-in-part of Ser. No. US 1993-93907, filed on 20 Jul 1993, ABANDONED Continuation-in-part of Ser. No. US 1992-884918, filed on 18 May 1992, ABANDONED Continuation-in-part of Ser. No. US 1995-482981, filed on 7 Jun 1995, GRANTED, Pat. No. US 6232116 Continuation-in-part of Ser. No. US 1995-458399, filed on 2 Jun 1995, GRANTED, Pat. No. US 6231870 Continuation-in-part of Ser. No. US 1995-446201, filed on 19 May 1995, GRANTED, Pat. No. US 6042838 Continuation-in-part of Ser. No. US 1994-246636, filed on 20 May 1994, GRANTED, Pat. No. US 5965141 Continuation-in-part of Ser. No. US 1994-319795, filed on 7 Oct 1994, GRANTED, Pat. No. US 5980909 Continuation-in-part of Ser. No. US 1993-72070, filed on 3 Jun 1993, GRANTED, Pat. No. US 5476929 Continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, ABANDONED
PRAI JP 1993-88369 19930415
JP 1993-287079 19931116
DT Utility
FS APPLICATION
LREP Michael L. Goldman, NIXON PEABODY LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051
CLMN Number of Claims: 3
ECL Exemplary Claim: 1
DRWN 69 Drawing Page(s)
LN.CNT 6753
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to **pneumococcal** genes, portions thereof, expression products therefrom and uses of such genes, portions and products; especially to genes of Streptococcus pneumoniae, e.g., the gene encoding **pneumococcal** surface protein A (**PspA**), i.e., the **pspA** gene, the gene encoding **pneumococcal** surface protein A-like proteins, such as **pspA**-like genes, e.g., the gene encoding **pneumococcal** surface protein C (PspC), i.e., the pspC gene, portions of such genes, expression products therefrom, and the uses of such genes, portions thereof and expression products therefrom.

L5 ANSWER 4 OF 15 USPATFULL on STN
AN 2004:88268 USPATFULL
TI Strain selection of **pneumococcal** surface proteins
IN Becker, Robert S., Henryville, PA, UNITED STATES
Briles, David E., Birmingham, AL, UNITED STATES
Hollingshead, Susan, Birmingham, AL, UNITED STATES
PI US 2004067237 A1 20040408

AI US 2003-674755 A1 20030930 (10)
RLI Continuation of Ser. No. US 1999-147875, filed on 24 May 1999, GRANTED, Pat. No. US 6638516 A 371 of International Ser. No. WO 1997-US16761, filed on 22 Sep 1997, PENDING Continuation-in-part of Ser. No. US 1996-710749, filed on 20 Sep 1996, GRANTED, Pat. No. US 5955089
DT Utility
FS APPLICATION
LREP Nixon Peabody LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051
CLMN Number of Claims: 34
ECL Exemplary Claim: 1
DRWN 10 Drawing Page(s)
LN.CNT 1826
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to vaccine composition(s) comprising at least two PspAs from strains selected from at least one family, the family being defined by PspAs from strains belonging to the family having greater than or equal to 50% homology in aligned sequences of a C-terminal region of an alpha helical region of **PspA**. Additionally, the families are further comprised of **clades**, wherein PspAs from strains which belong to a **clade** exhibit at least 75% sequence homology in aligned sequences of the C-terminal region of the alpha helix of **PspA**. Vaccine compositions of the present invention preferably comprise a minimum of 4 and a maximum of 6 strains representing a single **clade** each, and the at least two PspAs are optionally serologically or broadly cross-reactive.

L5 ANSWER 5 OF 15 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
DUPLICATE 1
AN 2003:549966 BIOSIS
DN PREV200300550214
TI Strain selection of **pneumococcal** surface proteins.
AU Becker, Robert S. [Inventor, Reprint Author]; **Briles, David E.** [Inventor]; Hollingshead, Susan [Inventor]
CS ASSIGNEE: The UAB Research Foundation
PI US 6638516 20031028
SO Official Gazette of the United States Patent and Trademark Office Patents, (Oct 28 2003) Vol. 1275, No. 4. http://www.uspto.gov/web/menu/patdata.html . e-file.
ISSN: 0098-1133 (ISSN print).
DT Patent
LA English
ED Entered STN: 19 Nov 2003
Last Updated on STN: 19 Nov 2003
AB The present invention relates to vaccine composition(s) comprising at least two PspAs from strains selected from at least one family, the family being defined by PspAs from strains belonging to the family having greater than or equal to 50% homology in aligned sequences of a C-terminal region of an alpha helical region of **PspA**. Additionally, the families are further comprised of **clades**, wherein PspAs from strains which belong to a **clade** exhibit at least 75% sequence homology in aligned sequences of the C-terminal region of the alpha helix of **PspA**. Vaccine compositions of the present invention preferably comprise a minimum of 4 and a maximum of 6 strains representing a single **clade** each, and the at least two PspAs are optionally serologically or broadly cross-reactive.

L5 ANSWER 6 OF 15 USPATFULL on STN
AN 2003:85835 USPATFULL
TI **PNEUMOCOCCAL** SURFACE PROTEIN C (PSPC), EPITOPIC REGIONS AND STRAIN SELECTION THEREOF, AND USES THEREFOR
IN **BRILES, DAVID E.**, BIRMINGHAM, AL, UNITED STATES
HOLLINGSHEAD, SUSAN K., BIRMINGHAM, AL, UNITED STATES
BROOKS-WALTER, ALEXIS, BIRMINGHAM, AL, UNITED STATES
PA NIXON PEABODY LLP (U.S. corporation)
PI US 2003059438 A1 20030327
AI US 1999-298523 A1 19990423 (9)
PRAI US 1998-82728P 19980423 (60)
DT Utility

FS APPLICATION
LREP Michael L Goldman, NIXON PEABODY LLP, Clinton Square, P O Box 31051, Rochester, NY, 14603
CLMN Number of Claims: 27
ECL Exemplary Claim: 1
DRWN 50 Drawing Page(s)
LN.CNT 1957
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed and claimed are: epitopic regions of **Pneumococcal** Surface Protein C or "PspC", different **clades** of PspC, isolated and/or purified nucleic acid molecules such as DNA encoding a fragment or portion of PspC such as an epitopic region of PspC or at least one epitope of PspC, uses for such nucleic acid molecules, e.g., to detect the presence of PspC or of S. pneumoniae by detecting a nucleic acid molecule therefor in a sample such as by amplification and/or a polymerase chain reaction, vectors or plasmids which contain and/or express such nucleic acid molecles, e.g., in vitro or in vivo, immunological, immunogenic or vaccine compositions including at least one PspC and/or a portion thereof (such as at least one epitopic region of at least one PspC and/or at least one polypeptide encoding at least one epitope of at least one PspC), either alone or in further combination with at least one second **pneumococcal** antigen, such as at least one different PspC and/or a fragment thereof and/or at least one **PspA** and/or at least one epitopic region of at least one **PspA** and/or at least one polypeptide including at least one epitope of **PspA**. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approximately the same amounts, as **PspA** . Thus, the invention further provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compositions.

L5 ANSWER 7 OF 15 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 2
AN 2003:172165 BIOSIS
DN PREV200300172165
TI Regions of **PspA**/EF3296 best able to elicit protection against Streptococcus pneumoniae in a murine infection model.
AU Roche, Hazeline; Hakansson, Anders; Hollingshead, Susan K.; **Briles, David E.** [Reprint Author]
CS Department of Microbiology, University of Alabama at Birmingham, 845 19th St. South, BBRB-662 Box 10, Birmingham, AL, 35294, USA dbriles@uab.edu
SO Infection and Immunity, (March 2003) Vol. 71, No. 3, pp. 1033-1041. print. ISSN: 0019-9567 (ISSN print).
DT Article
LA English
ED Entered STN: 2 Apr 2003
Last Updated on STN: 2 Apr 2003
AB **Pneumococcal** surface protein A (**PspA**) can elicit protection against Streptococcus pneumoniae in mouse infection models. **PspA** is classified by serology and amino acid sequence into two major families that are divided by sequence into five **clades**. The most variable portion of the molecule is the alpha-helical domain, which comprises the N-terminal half of **PspA**. Prior studies of a family 1 **PspA** protein observed that protective antibodies are reactive with epitopes in the alpha-helical domain and that most cross-protective epitopes mapped to the 108 most C-terminal amino acids of the alpha-helical region. In these studies, we have used six overlapping recombinant fragments of family 2, **clade** 3 **PspA**/EF3296 to map the protection-eliciting regions of its alpha-helical domain. The three fragments, which included the 104 most C-terminal amino acids of the alpha-helical domain (314 to 418), could each elicit protection against EF3296. A fragment comprising amino acids 75 to 305 failed to elicit significant protection. A fragment containing amino acids 1 to 115 elicited protection against EF3296 in BALB/c mice but not in CBA/N mice. All three fragments containing amino acids 314 to 418 were able to elicit cross-protection against **pneumococci** expressing **PspA** proteins of **clades** 2, 3, 4, and 5. Cross-protection elicited by

these three fragments was easier to demonstrate in CBA/N mice than in BALB/c mice. The 1-to-115 fragment, however, elicited some cross-protection against **clades** 2 and 4 in BALB/c mice but not in CBA/N mice. These studies provide support for the importance of the C-terminal 104 and N-terminal 115 amino acids of the alpha-helical region of **PspA** in the elicitation of cross-protection.

L5 ANSWER 8 OF 15 USPATFULL on STN
AN 2002:346772 USPATFULL
TI **Pneumococcal** surface proteins and uses thereof
IN **Briles, David E.**, Birmingham, AL, United States
McDaniel, Larry S., Ridgland, MS, United States
Swiatlo, Edwin, Birmingham, AL, United States
Yother, Janet, Birmingham, AL, United States
Crain, Marilyn J., Birmingham, AL, United States
Hollingshead, Susan, Birmingham, AL, United States
Tart, Rebecca, Benson, NC, United States
Brooks-Walter, Alexis, Birmingham, AL, United States
PA University of Alabama at Birmingham, Birmingham, AL, United States (U.S. corporation)
PI US 6500613 B1 20021231
AI US 1996-714741 19960916 (8)
RLI Continuation-in-part of Ser. No. US 1995-529055, filed on 15 Sep 1995
DT Utility
FS GRANTED
EXNAM Primary Examiner: Housel, James C.; Assistant Examiner: Swartz, Rodney P.
LREP Frommer Lawrence & Haug LLP, Frommer, William S., Kowalski, Thomas J.
CLMN Number of Claims: 9
ECL Exemplary Claim: 1
DRWN 71 Drawing Figure(s); 69 Drawing Page(s)
LN.CNT 7865
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to **pneumococcal** genes, portions thereof, expression products therefrom and uses of such genes, portions and products; especially to genes of Streptococcus pneumoniae, e.g., the gene encoding **pneumococcal** surface protein A (**PspA**), i.e., the **pspA** gene, the gene encoding **pneumococcal** surface protein A-like proteins, such as **pspA**-like genes, e.g., the gene encoding **pneumococcal** surface protein C (PspC), i.e., the pspC gene, portions of such genes, expression products therefrom, and the uses of such genes, portions thereof and expression products therefrom.

L5 ANSWER 9 OF 15 USPATFULL on STN
AN 2001:139158 USPATFULL
TI **Pneumococcal** surface protein C (PspC), epitopic regions and strain selection thereof, and uses therefor
IN **Briles, David E.**, Birmingham, AL, United States
Hollingshead, Susan K., Birmingham, AL, United States
Brooks-Walter, Alexis, Birmingham, AL, United States
PI US 2001016200 A1 20010823
AI US 2000-748875 A1 20001226 (9)
RLI Division of Ser. No. US 1999-298523, filed on 23 Apr 1999, PENDING
PRAI US 1998-82728P 19980423 (60)
DT Utility
FS APPLICATION
LREP FROMMER LAWRENCE & HAUG, 745 FIFTH AVENUE, NEW YORK, NY, 10151
CLMN Number of Claims: 27
ECL Exemplary Claim: 1
DRWN 50 Drawing Page(s)
LN.CNT 1911
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed and claimed are: epitopic regions of **Pneumococcal** Surface Protein C or "PspC", different **clades** of PspC, isolated and/or purified nucleic acid molecules such as DNA encoding a fragment or portion of PspC such as an epitopic region of PspC or at least one epitope of PspC, uses for such nucleic acid molecules, e.g., to detect the presence of PspC or of S. pneumoniae by detecting a

nucleic acid molecule therefor in a sample such as by amplification and/or a polymerase chain reaction, vectors or plasmids which contain and/or express such nucleic acid molecles, e.g., in vitro or in vivo, immunological, immunogenic or vaccine compositions including at least one PspC and/or a portion thereof (such as at least one epitopic region of at least one PspC and/or at least one polypeptide encoding at least one epitope of at least one PspC), either alone or in further combination with at least one second **pneumococcal** antigen, such as at least one different PspC and/or a fragment thereof and/or at least one **PspA** and/or at least one epitopic region of at least one **PspA** and/or at least one polypeptide including at least one epitope of **PspA**. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approximately the same amounts, as **PspA** . Thus, the invention further provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compositions.

L5 ANSWER 10 OF 15 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 3
AN 2000:474386 BIOSIS
DN PREV200000474386
TI Diversity of **PspA**: Mosaic genes and evidence for past recombination in Streptococcus pneumoniae.
AU Hollingshead, Susan K. [Reprint author]; Becker, Robert; **Briles, David E.**
CS Department of Microbiology, University of Alabama at Birmingham, BBRB654, Birmingham, AL, 35294, USA
SO Infection and Immunity, (October, 2000) Vol. 68, No. 10, pp. 5889-5900. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
ED Entered STN: 1 Nov 2000
Last Updated on STN: 10 Jan 2002
AB **Pneumococcal** surface protein A (**PspA**) is a serologically variable protein of Streptococcus pneumoniae. Twenty-four diverse alleles of the **pspA** gene were sequenced to investigate the genetic basis for serologic diversity and to evaluate the potential of diversity to have an impact on **PspA**'s use in human vaccination. The 24 **pspA** gene sequences from unrelated strains revealed two major allelic types, termed "families," subdivided into **clades**. A highly mosaic gene structure was observed in which individual mosaic sequence blocks in PspAs diverged from each other by over 20% in many cases. This level of divergence exceeds that observed for blocks in the penicillin-binding proteins of S. pneumoniae or in many cross-species comparisons of gene loci. Conversely, because the mosaic pattern is so complex, each pair of **pspA** genes also has numerous shared blocks, but the position of conserved blocks differs from gene pair to gene pair. A central region of **pspA**, important for eliciting protective antibodies, was found in six **clades**, which each diverge from the other **clades** by >20%. Sequence relationships among the 24 alleles analyzed over three windows were discordant, indicating that intragenic recombination has occurred within this locus. The extensive recombination which generated the mosaic pattern seen in the **pspA** locus suggests that natural selection has operated in the history of this gene locus and underscores the likelihood that **PspA** may be important in the interaction between the **pneumococcus** and its human host.

L5 ANSWER 11 OF 15 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 4
AN 2000:174346 BIOSIS
DN PREV200000174346
TI Immunization of healthy adults with a single recombinant **pneumococcal** surface protein A (**PspA**) variant stimulates broadly cross-reactive antibodies to heterologous **PspA** molecules.
AU Nabors, Gary S. [Reprint author]; Braun, Patricia A.; Herrmann, Diane J.;

Heise, Martha L.; Pyle, Derek J.; Gravenstein, Stefan; Schilling, Margot; Ferguson, Laura M.; Hollingshead, Susan K.; **Briles, David E.**; Becker, Robert S.

CS Aventis Pasteur, Discovery Drive, Swiftwater, PA, 18370, USA

SO Vaccine, (March 6, 2000) Vol. 18, No. 17, pp. 1743-1754. print.
CODEN: VACCDE. ISSN: 0264-410X.

DT Article

LA English

ED Entered STN: 3 May 2000
Last Updated on STN: 4 Jan 2002

AB **Pneumococcal** surface protein A (**PspA**) is a highly variable protein found on all strains of **pneumococci**. To be successful, a **PspA**-based vaccine for S. pneumoniae must induce antibodies that are broadly cross-reactive. To address whether cross-reactive antibodies could be induced in man, we evaluated serum from adults immunized with recombinant **clade** 2 **PspA** from strain Rx1. Immunization with 5-125 mug rPspA lead to a significant increase in circulating anti-**PspA** antibodies, as well as antibodies reactive to heterologous rPspA molecules. Increased binding of post-immune sera to 37 **pneumococcal** strains expressing a variety of **PspA** and capsule types was observed, versus pre-immune sera. The extent of cross-**clade** reactivity of human anti-rPspA followed roughly the amount of sequence homology to the non-**clade** 2 antigens. It is hypothesized that priming of humans by natural exposure to S. pneumoniae contributes to the breadth of the cross-reactivity of antibody to **PspA**.

L5 ANSWER 12 OF 15 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 5

AN 1999:606909 CAPLUS

DN 131:241963

TI Streptococcal vaccines based on selection of cross-reactive **pneumococcal** surface proteins

IN **Briles, David E.**; Hollingshead, Susan; Becker, Robert

PA Uab Research Foundation, USA

SO U.S., 35 pp., Cont.-in-part of U. S. 5,579,768.
CODEN: USXXAM

DT Patent

LA English

FAN.CNT 19

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5955089	A	19990921	US 1996-710749	19960920
	JP 2002167399	A2	20020611	JP 2001-227943	19940419
	US 5679768	A	19971021	US 1995-465746	19950606
	CA 2267343	AA	19980326	CA 1997-2267343	19970922
	WO 9811915	A1	19980326	WO 1997-US16761	19970922
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9744287	A1	19980414	AU 1997-44287	19970922
	AU 726927	B2	20001123		
	EP 956043	A1	19991117	EP 1997-942626	19970922
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2000503676	T2	20000328	JP 1998-514944	19970922
	NZ 334811	A	20000929	NZ 1997-334811	19970922
	JP 2003002842	A2	20030108	JP 2002-119707	19970922
	NO 9901340	A	19990518	NO 1999-1340	19990319
	US 6638516	B1	20031028	US 1999-147875	19990524
	US 2004067237	A1	20040408	US 2003-674755	20030930
PRAI	US 1993-48896	B1	19930420		
	US 1995-465746	A2	19950606		
	US 1991-656773	B2	19910215		
	US 1992-835698	B2	19920212		

	JP 1994-80735	A3	19940419
	US 1996-710749	A	19960920
	JP 1998-514944	A3	19970922
	WO 1997-US16761	W	19970922
	US 1999-147875	A1	19990524

AB The present invention relates to vaccine composition(s) comprising at least two **pneumococcal** surface protein A (**PspA**) proteins from strains selected from at least one family; the family being defined by PspAs from strains having greater than or equal to 50% homol. in aligned sequences of a C-terminal region of an alpha helical region of **PspA**. Addnl., the families are further comprised of **clades**, wherein PspAs from strains which belong to a **clade** exhibit at least 75% sequence homol. in aligned sequences of the C-terminal region of the alpha helix of **PspA**. Vaccine compns. of the present invention preferably comprise a min. of 4 and a maximum of 6 strains representing a single **clade** each, and the at least two PspAs are optionally serol. or broadly cross-reactive.

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 13 OF 15 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:690969 CAPLUS
DN 131:321533
TI Epitopic regions and strain selection of **pneumococcal** surface protein C from Streptococcus pneumoniae
IN **Briles, David E.**; Hollingshead, Susan K.; Brooks-Walter, Alexis
PA University of Alabama at Birmingham, USA
SO PCT Int. Appl., 109 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9953940	A1	19991028	WO 1999-US8895	19990423
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	CA 2328399	AA	19991028	CA 1999-2328399	19990423
	AU 9937584	A1	19991108	AU 1999-37584	19990423
	AU 770378	B2	20040219		
	EP 1073450	A1	20010207	EP 1999-919991	19990423
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002516251	T2	20020604	JP 2000-544343	19990423
	US 2003059438	A1	20030327	US 1999-298523	19990423
	US 2001016200	A1	20010823	US 2000-748875	20001226
	US 2005196405	A1	20050908	US 2003-341201	20030113
PRAI	US 1998-82728P	P	19980423		
	US 1999-298523	A3	19990423		
	WO 1999-US8895	W	19990423		
	US 2000-748875	B1	20001226		

AB Immunization with purified **pneumococcal** surface protein C (PspC) is able to elicit protection against sepsis, and this protection is apparently mediated by antibodies cross-reactive with **PspA**. The genetic diversity present within this locus, herein called pspC, was also investigated by the examination of 12 sequenced alleles, including the previously sequenced alleles of cbpA and spsA, an allele from the genomic sequencing project, and 7 newly sequenced pspC genes. PspC is a chimeric protein which has acquired domains from both interspecies and intraspecies genetic exchanges, and which can be divided into two **clades** based on the sequences in the α-helical and proline-rich domains. The identification of two **clades** of PspC is pertinent to

PspC-containing vaccine, immunol. or immunogenic compns, as well as to methods for identifying **PspA**, **pspA**, PspC, pspC, and/or S. pneumoniae. Moreover, the observation that antibodies to the proline-rich regions of **PspA** and PspC can be cross-protective facilitates the design of more efficacious vaccines, e.g., by providing epitopic regions of PspC, epitopes of PspC, and nucleic acid mols. encoding the same. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approx. the same amts., as **PspA**. Thus, the invention provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compns.

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 14 OF 15 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 6

AN 2000:64128 BIOSIS

DN PREV200000064128

TI The pspC gene of Streptococcus pneumoniae encodes a polymorphic protein, PspC, which elicits cross-reactive antibodies to **PspA** and provides immunity to **pneumococcal** bacteremia.

AU Brooks-Walter, Alexis [Reprint author]; **Briles, David E.**; Hollingshead, Susan K.

CS Department of Microbiology, University of Alabama at Birmingham, BBRB 658, Birmingham, AL, USA

SO Infection and Immunity, (Dec., 1999) Vol. 67, No. 12, pp. 6533-6542. print.
CODEN: INFIBR. ISSN: 0019-9567.

DT Article

LA English

OS Genbank-AF019904; Genbank-AF067128; Genbank-AJ002054; Genbank-AJ002055; Genbank-Y10818

ED Entered STN: 9 Feb 2000
Last Updated on STN: 3 Jan 2002

AB PspC is one of three designations for a **pneumococcal** surface protein whose gene is present in approximately 75% of all Streptococcus pneumoniae strains. Under the name SpsA, the protein has been shown to bind secretory immunoglobulin A (S. Hammerschmidt, S. R. Talay, P. Brandtzaeg, and G. S. Chhatwal, Mol. Microbiol. 25:1113-1124, 1997). Under the name CbpA, the protein has been shown to interact with human epithelial and endothelial cells (C. Rosenow et al., Mol. Microbiol. 25:819-829, 1997). The gene is paralogous to the **pspA** gene in S. pneumoniae and was thus called pspC (A. Brooks-Walter, R. C. Tart, D. E. Briles, and S. K. Hollingshead, Abstracts of the 97th General Meeting of the American Society for Microbiology 1997). Sequence comparisons of five published and seven new alleles reveal that this gene has a mosaic structure, and modular domains have contributed to gene diversity during evolution. Two major **clades** exist: **clade** A alleles are larger and contain an extra module that is shared with many **pspA** alleles; **clade** B alleles are smaller and lack this **pspA**-like domain. All alleles have a proline-rich domain and a choline-binding repeat domain that show 0% divergence from similar domains in the **PspA** protein. Immunization of a rabbit with a recombinant **clade** B PspC molecule produced antiserum that cross-reacted with both PspC and **PspA** from 15 **pneumococcal** isolates. The cross-reactive antibodies afforded cross-protection in a mouse model system. Mice immunized with PspC were protected against challenge with a strain that expressed **PspA** but not PspC. The **PspA**- and PspC-cross-reactive antibodies were directed to the proline-rich domain present in both molecules.

L5 ANSWER 15 OF 15 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1998:197416 CAPLUS

DN 128:281705

TI Strain selection of **pneumococcal** surface proteins

IN Becker, Robert S.; **Briles, David E.**; Hollingshead, Susan

PA Connaught Laboratories, Inc., USA; Becker, Robert S.; Briles, David E.; Hollingshead, Susan

SO PCT Int. Appl., 58 pp.
    CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 19

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9811915	A1	19980326	WO 1997-US16761	19970922
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	US 5955089	A	19990921	US 1996-710749	19960920
	CA 2267343	AA	19980326	CA 1997-2267343	19970922
	AU 9744287	A1	19980414	AU 1997-44287	19970922
	AU 726927	B2	20001123		
	EP 956043	A1	19991117	EP 1997-942626	19970922
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2000503676	T2	20000328	JP 1998-514944	19970922
	NZ 334811	A	20000929	NZ 1997-334811	19970922
	NO 9901340	A	19990518	NO 1999-1340	19990319
	BR 9908649	A	20011030	BR 1999-8649	19990326
	US 6638516	B1	20031028	US 1999-147875	19990524
	US 2004067237	A1	20040408	US 2003-674755	20030930
PRAI	US 1996-710749	A2	19960920		
	US 1993-48896	B1	19930420		
	US 1995-465746	A2	19950606		
	WO 1997-US16761	W	19970922		
	US 1999-147875	A1	19990524		

AB The present invention relates to vaccine composition(s) comprising at least two PspAs from strains selected from at least one family, the family being defined by PspAs from strains belonging to the family having greater than or equal to 50 % homol. in aligned sequences of a C-terminal region of an alpha helical region of **PspA**. Addnl., the families are further comprised of **clades**, wherein PspAs from strains which belong to a **clade** exhibit at least 75 % sequence homol. in aligned sequences of the C-terminal region of the alpha helix of **PspA**. Vaccine compns. of the present invention preferably comprise a min. of 4 and a maximum of 6 strains representing a single **clade** each, and the at least two PspAs are optionally serol. or broadly cross-reactive.

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
           ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> e hollingshead susan/au

E1	6	HOLLINGSHEAD SHEILA/AU
E2	1	HOLLINGSHEAD STEPHEN C/AU
E3	35 -->	HOLLINGSHEAD SUSAN/AU
E4	153	HOLLINGSHEAD SUSAN K/AU
E5	1	HOLLINGSHEAD SUSAN KAY/AU
E6	2	HOLLINGSHEAD T A/AU
E7	1	HOLLINGSHEAD T E/AU
E8	1	HOLLINGSHEAD T S/AU
E9	1	HOLLINGSHEAD THOS E/AU
E10	1	HOLLINGSHEAD TIMOTHY W/AU
E11	2	HOLLINGSHEAD W/AU
E12	5	HOLLINGSHEAD W S/AU

=> s e3-e5 and pneumoco?
L6 119 ("HOLLINGSHEAD SUSAN"/AU OR "HOLLINGSHEAD SUSAN K"/AU OR "HOLLINGSHEAD SUSAN KAY"/AU) AND PNEUMOCO?

=> s l6 and pspa
L7 90 L6 AND PSPA

=> dup rem l7
PROCESSING COMPLETED FOR L7
L8 46 DUP REM L7 (44 DUPLICATES REMOVED)

=> d bib ab 1-
YOU HAVE REQUESTED DATA FROM 46 ANSWERS - CONTINUE? Y/(N):y

L8 ANSWER 1 OF 46 MEDLINE on STN
AN 2006046071 IN-PROCESS
DN PubMed ID: 16434715
TI **Pneumococcal** surface protein A (**PspA**) family distribution among clinical isolates from adults over 50 years of age collected in seven countries.
AU **Hollingshead Susan K**; Baril Laurence; Ferro Santiago; King Janice; Coan Pat; Briles David E
CS Department of Microbiology, University of Alabama at Birmingham, BBRB 658, AL 35294, USA. (Pneumococcal Proteins Epi Study Group).
SO Journal of medical microbiology, (2006 Feb) 55 (Pt 2) 215-21.
Journal code: 0224131. ISSN: 0022-2615.
CY England: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS NONMEDLINE; IN-PROCESS; NONINDEXED; Priority Journals
ED Entered STN: 20060126
Last Updated on STN: 20060214
AB The **pneumococcal** surface protein **PspA**, a cell-wall-associated surface protein, is a promising component for **pneumococcal** vaccines. In this study, the distribution of the **PspA** family was determined in a panel of invasive and clinically important **pneumococcal** isolates from adults over 50 years of age, collected between 1995 and 2002. One thousand eight hundred and forty-seven recent isolates from invasive **pneumococcal** disease were obtained from seven Western countries, together with clinical data. An ELISA-based serological method was standardized in order to determine the **PspA** family and clade distribution. Molecular tests were used when isolates were non-typable by ELISA (**PspA** family typing by PCR). Only 42 (2.3 %) isolates were non-typable by ELISA and **PspA** family typing by PCR was performed. Finally, 3 isolates were considered as non-**pneumococcal** and 1844 were classified as follows: 749 (40.6 %) were **PspA** family 1, 1078 (58.5 %) were **PspA** family 2, 13 (0.7 %) were **PspA** family 1 and 2 and 4 (0.2 %) remained non-typable. The cross-reactivity of antibodies to PspAs of different clades was confirmed. In conclusion, inclusion of **PspA** family 1 and family 2 in future **pneumococcal** vaccines would ensure broad coverage of **pneumococcal** strains infecting people over 50 years of age.

L8 ANSWER 2 OF 46 USPATFULL on STN
AN 2005:226556 USPATFULL
TI **PNEUMOCOCCAL** SURFACE PROTEIN C (PSPC), EPITOPIC REGIONS AND STRAIN SELECTION THEREOF, AND USES THEREFOR
IN Briles, David E., Birmingham, AL, UNITED STATES
Hollingshead, Susan K., Birmingham, AL, UNITED STATES
Brooks-Walter, Alexis, Birmingham, AL, UNITED STATES
PI US 2005196405 A1 20050908
AI US 2003-341201 A1 20030113 (10)
RLI Continuation of Ser. No. US 2000-748875, filed on 26 Dec 2000, ABANDONED
Division of Ser. No. US 1999-298523, filed on 23 Apr 1999, PENDING
PRAI US 1998-82728P 19980423 (60)
DT Utility
FS APPLICATION
LREP Michael L. Goldman, Esq., NIXON PEABODY LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051, US
CLMN Number of Claims: 10
ECL Exemplary Claim: 1-27
DRWN 50 Drawing Page(s)
LN.CNT 4782
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Disclosed and claimed are: epitopic regions of **Pneumococcal** Surface Protein C or "PspC", different clades of PspC, isolated and/or purified nucleic acid molecules such as DNA encoding a fragment or portion of PspC such as an epitopic region of PspC or at least one epitope of PspC, uses for such nucleic acid molecules, e.g., to detect the presence of PspC or of S. pneumoniae by detecting a nucleic acid molecule therefor in a sample such as by amplification and/or a polymerase chain reaction, vectors or plasmids which contain and/or express such nucleic acid molecles, e.g., in vitro or in vivo, immunological, immunogenic or vaccine compositions including at least one PspC and/or a portion thereof (such as at least one epitopic region of at least one PspC and/or at least one polypeptide encoding at least one epitope of at least one PspC), either alone or in further combination with at least one second **pneumococcal** antigen, such as at least one different PspC and/or a fragment thereof and/or at least one **PspA** and/or at least one epitopic region of at least one **PspA** and/or at least one polypeptide including at least one epitope of **PspA**. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approximately the same amounts, as **PspA** . Thus, the invention further provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compositions.

L8 ANSWER 3 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
DUPLICATE 1
AN 2005:169340 BIOSIS
DN PREV200500170294
TI Differential PsaA-, **PspA**-, PspC-, and PdB-specific immune responses in a mouse model of **pneumococcal** carriage.
AU Palaniappan, Ravichandran; Singh, Shailesh; Singh, Udai P.; Sakthivel, Senthil Kumar K.; Ades, Edwin W.; Briles, David E.; **Hollingshead, Susan K.**; Paton, James C.; Sampson, Jacquelyn S.; Lillard, James W. Jr [Reprint Author]
CS Dept Microbiol Biochem and Immunol, Morehouse Sch Med, 720 Westview Dr SE, Atlanta, GA, 30310, USA
lillard@msm.edu
SO Infection and Immunity, (February 2005) Vol. 73, No. 2, pp. 1006-1013. print.
ISSN: 0019-9567 (ISSN print).
DT Article
LA English
ED Entered STN: 4 May 2005
Last Updated on STN: 4 May 2005
AB Larger numbers of **pneumococci** were detected in the nasal tract compared to the lung, cervical lymph nodes, and spleen 1, 2, 4, 7, 14, and 21 days after nasal challenge with Streptococcus pneumoniae strain EF3030. In this mouse model of **pneumococcal** carriage, peripheral S. pneumoniae **pneumococcal** surface adhesin A (PsaA)specific humoral responses (immunoglobulin G2a (IgG2a) >> IgG1 = IgG2b > IgG3) were significantly higher than **pneumococcal** surface protein A (**PspA**)-specific, genetic toxoid derivative of pneumolysin (PdB)-specific, or **pneumococcal** surface protein C (PspC)-specific serum antibody levels. However, **PspA**-specific mucosal IgA antibody levels were significantly higher than those against PsaA, PdB, and PspC. In general, both PsaA- and **PspA**-specific lung-, cervical lymph node-, nasal tract-, and spleen-derived CD4+ T-cell cytokine (interleukin-4, interleukin-6, granulocyte-macrophage colony-stimulating factor, gamma interferon, and tumor necrosis factor alpha) and proliferative responses were higher than those for either PspC or PdB. Taken together, these findings suggest that PsaA- and **PspA**-specific mucosal responses as well as systemic Immoral and T helper cell cytokine responses are predominantly yet differentially induced during **pneumococcal** carriage.

L8 ANSWER 4 OF 46 USPATFULL on STN
AN 2004:101977 USPATFULL
TI **Pneumococcal** genes, portions thereof, expression products therefrom, and uses of such genes, portions and products

IN Briles, David E., Birmingham, AL, UNITED STATES
McDaniel, Larry S., Ridgland, MS, UNITED STATES
Swiatlo, Edwin, Birmington, AL, UNITED STATES
Yother, Janet, Birmingham, AL, UNITED STATES
Crain, Marilyn J., Birmingham, AL, UNITED STATES
Hollingshead, Susan, Birmingham, AL, UNITED STATES
Tart, Rebecca, Benson, NC, UNITED STATES
Brooks-Walter, Alexis, Birmingham, AL, UNITED STATES
PI US 2004077847 A1 20040422
AI US 2002-299636 A1 20021119 (10)
RLI Division of Ser. No. US 1996-714741, filed on 16 Sep 1996, GRANTED, Pat. No. US 6500613 Continuation-in-part of Ser. No. US 1995-529055, filed on 15 Sep 1995, GRANTED, Pat. No. US 6592876 Continuation-in-part of Ser. No. US 1994-226844, filed on 13 Apr 1994, GRANTED, Pat. No. US 5586225 Continuation-in-part of Ser. No. US 1993-93907, filed on 20 Jul 1993, ABANDONED Continuation-in-part of Ser. No. US 1992-884918, filed on 18 May 1992, ABANDONED Continuation-in-part of Ser. No. US 1995-482981, filed on 7 Jun 1995, GRANTED, Pat. No. US 6232116 Continuation-in-part of Ser. No. US 1995-458399, filed on 2 Jun 1995, GRANTED, Pat. No. US 6231870 Continuation-in-part of Ser. No. US 1995-446201, filed on 19 May 1995, GRANTED, Pat. No. US 6042838 Continuation-in-part of Ser. No. US 1994-246636, filed on 20 May 1994, GRANTED, Pat. No. US 5965141 Continuation-in-part of Ser. No. US 1994-319795, filed on 7 Oct 1994, GRANTED, Pat. No. US 5980909 Continuation-in-part of Ser. No. US 1993-72070, filed on 3 Jun 1993, GRANTED, Pat. No. US 5476929 Continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, ABANDONED
PRAI JP 1993-88369 19930415
JP 1993-287079 19931116
DT Utility
FS APPLICATION
LREP Michael L. Goldman, NIXON PEABODY LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051
CLMN Number of Claims: 3
ECL Exemplary Claim: 1
DRWN 69 Drawing Page(s)
LN.CNT 6753
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to **pneumococcal** genes, portions thereof, expression products therefrom and uses of such genes, portions and products; especially to genes of Streptococcus pneumoniae, e.g., the gene encoding **pneumococcal** surface protein A (**PspA**), i.e., the **pspA** gene, the gene encoding **pneumococcal** surface protein A-like proteins, such as **pspA**-like genes, e.g., the gene encoding **pneumococcal** surface protein C (PspC), i.e., the pspC gene, portions of such genes, expression products therefrom, and the uses of such genes, portions thereof and expression products therefrom.

L8 ANSWER 5 OF 46 USPATFULL on STN
AN 2004:88268 USPATFULL
TI Strain selection of **pneumococcal** surface proteins
IN Becker, Robert S., Henryville, PA, UNITED STATES
Briles, David E., Birmingham, AL, UNITED STATES
Hollingshead, Susan, Birmingham, AL, UNITED STATES
PI US 2004067237 A1 20040408
AI US 2003-674755 A1 20030930 (10)
RLI Continuation of Ser. No. US 1999-147875, filed on 24 May 1999, GRANTED, Pat. No. US 6638516 A 371 of International Ser. No. WO 1997-US16761, filed on 22 Sep 1997, PENDING Continuation-in-part of Ser. No. US 1996-710749, filed on 20 Sep 1996, GRANTED, Pat. No. US 5955089
DT Utility
FS APPLICATION
LREP Nixon Peabody LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051
CLMN Number of Claims: 34
ECL Exemplary Claim: 1
DRWN 10 Drawing Page(s)
LN.CNT 1826

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to vaccine composition(s) comprising at least two PspAs from strains selected from at least one family, the family being defined by PspAs from strains belonging to the family having greater than or equal to 50% homology in aligned sequences of a C-terminal region of an alpha helical region of **PspA**. Additionally, the families are further comprised of clades, wherein PspAs from strains which belong to a clade exhibit at least 75% sequence homology in aligned sequences of the C-terminal region of the alpha helix of **PspA**. Vaccine compositions of the present invention preferably comprise a minimum of 4 and a maximum of 6 strains representing a single clade each, and the at least two PspAs are optionally serologically or broadly cross-reactive.

L8 ANSWER 6 OF 46 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:1056181 CAPLUS
DN 143:284329
TI **PspA** protects Streptococcus pneumoniae from killing by apolactoferrin, and antibody to **PspA** enhances killing of **pneumococci** by apolactoferrin. [Erratum to document cited in CA141:312601]
AU Shaper, Mirza; **Hollingshead, Susan K.**; Benjamin, William H., Jr.; Briles, David E.
CS Department of Microbiology, University of Alabama at Birmingham, Birmingham, AL, USA
SO Infection and Immunity (2004), 72(12), 7379
CODEN: INFIBR; ISSN: 0019-9567
PB American Society for Microbiology
DT Journal
LA English
AB The corrected byline is given. The author list is Shaper Mirza, Susan K. Hollingshead, William H. Benjamin, Jr., and David E. Briles. Shaper Mirza, Susan K. Hollingshead, and David E. Briles are affiliated with the Department of Microbiol., and William H. Benjamin, Jr., with the Department of Pathol., University of Alabama at Birmingham, Birmingham, Alabama.

L8 ANSWER 7 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
DUPLICATE 2
AN 2004:423380 BIOSIS
DN PREV200400425830
TI **PspA** protects Streptococcus pneumoniae from killing by apolactoferrin, and antibody to **PspA** enhances killing of **pneumococci** by a polactoferrin.
AU Shaper, Mirza; **Hollingshead, Susan K.**; Benjamin, William H. Jr.; Briles, David E. [Reprint Author]
CS Box 10,BBRB 658,1530 3rd Ave S, Birmingham, AL, 35294, USA
dbriles@uab.edu
SO Infection and Immunity, (September 2004) Vol. 72, No. 9, pp. 5031-5040. print.
ISSN: 0019-9567 (ISSN print).
DT Article
LA English
ED Entered STN: 3 Nov 2004
Last Updated on STN: 3 Nov 2004
AB Lactoferrin is an important component of innate immunity through its sequestration of iron, bactericidal activity, and immune modulatory activity. Apollactoferrin (ALF) is the iron-depleted form of lactoferrin and is bactericidal against **pneumococci** and several other species of bacteria. We observed that lactoferricin (LFN), an 11-amino-acid peptide from the N terminus of lactoferrin, is bactericidal for Streptococcus pneumoniae. Strains of S. pneumoniae varied in their susceptibility to ALF. Lactoferrin is bound to the **pneumococcal** surface by **pneumococcal** surface protein A (**PspA**). Using mutant **PspA**- **pneumococci** of four different strains, we observed that **PspA** offers significant protection against killing by ALF. Knockout mutations in genes for two other choline-binding proteins (PspC and PcpA) did not affect killing by ALF. **PspA** did not have to be attached to the bacterial surface to

inhibit killing, because the soluble recombinant N-terminal half of **PspA** could prevent killing by both ALF and LFN. An 11-amino-acid fragment of **PspA** was also able to reduce the killing by LFN. Antibody to **PspA** enhanced killing by lactoferrin. These findings suggested that the binding of ALF to **PspA** probably blocks the active site(s) of ALF that is responsible for killing.

L8 ANSWER 8 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
DUPLICATE 3
AN 2005:34038 BIOSIS
DN PREV200500033372
TI Typing of **pneumococcal** surface protein A (**PspA**) in Streptococcus pneumoniae isolated during epidemiological surveillance in Brazil: towards novel **pneumococcal** protein vaccines.
AU Brandileone, Maria Cristina C. [Reprint Author]; Andrade, Ana Lucia S. S.; Teles, Elaine M.; Zanella, Rosemeire C.; Yara, Teresa I.; Di Fabio, Jose Luis; **Hollingshead, Susan K.**
CS Bacteriol BranchSecretary Hlth State Sao Paulo, Adolfo Lutz Inst IAL, Av Dr Arnaldo 351, BR-01246902, Sao Paulo, Brazil
brandi@ial.sp.gov.br
SO Vaccine, (September 28 2004) Vol. 22, No. 29-30, pp. 3890-3896. print.
ISSN: 0264-410X (ISSN print).
DT Article
LA English
ED Entered STN: 19 Jan 2005
Last Updated on STN: 19 Jan 2005
AB **Pneumococcal** protein vaccine based on **pneumococcal** surface protein A (**PspA**) is in development with the potential to offer broad range of protection against different strains. We have investigated the frequency of **PspA** family I (Fam1) and family 2 (Fam2) proteins among Streptococcus pneumoniae recovered from ongoing surveillance in Brazil. Fam I and Fam2 were expressed in comparable rates among 366 isolates, with the potential coverage of 94.3%. **PspA** families were not associated to age group or source of isolates. However, considering the significant tendency of increasing prevalence of Fam2 associated to widespread dissemination of the genetically-related resistant strains, the monitoring of the **PspA** families derived from population-based data may be necessary in the context of vaccine development. Copyright 2004 Elsevier Ltd. All rights reserved.

L8 ANSWER 9 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
DUPLICATE 4
AN 2005:131659 BIOSIS
DN PREV200500130853
TI Characterization of antibodies to **PspA** and PsaA in adults over 50 years of age with invasive **pneumococcal** disease.
AU Baril, Laurence [Reprint Author]; Briles, David E.; Crozier, Pierre; King, Janice; Punar, Metin; **Hollingshead, Susan K.**; McCormick, Joseph B.
CS Emerging Dis Epidemiol Unit, Inst Pasteur, 25 Rue Dr Roux, F-75015, Paris, France
baril@pasteur.fr; dbriles@uab.edu
SO Vaccine, (December 21 2004) Vol. 23, No. 6, pp. 789-793. print.
ISSN: 0264-410X (ISSN print).
DT Article
LA English
ED Entered STN: 6 Apr 2005
Last Updated on STN: 6 Apr 2005
AB We characterized antibody responses to two Streptococcus pneumoniae surface proteins, **PspA** and PsaA in 14 adults over 50 years of age hospitalized with invasive **pneumococcal** disease (IPD), and in two groups of age-matched controls (18 patients with invasive disease due to other microorganisms and 35 patients hospitalized for non infectious conditions). All patients with IPD and all control subjects had detectable antibodies to both proteins on hospital admission. Three weeks later, the geometric mean concentrations of antibodies to **PspA** and PsaA in IPD patients were respectively 10 and 25 times higher than on admission. In contrast, acute and convalescent antibody levels were similar in control patients with invasive diseases due to

other microorganisms. Copyright 2004 Elsevier Ltd. All rights reserved.

L8 ANSWER 10 OF 46 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:371717 CAPLUS
DN 141:312305
TI **Pneumococcal** common proteins and other vaccine strategies
AU Briles, David E.; **Hollingshead, Susan K.**; Paton, James C.
CS The University of Alabama at Birmingham, Birmingham, AL, USA
SO New Generation Vaccines (3rd Edition) (2004), 459-469. Editor(s): Levine, Myron M. Publisher: Marcel Dekker, Inc., New York, N. Y. CODEN: 69FIV5; ISBN: 0-8247-4071-8
DT Conference; General Review
LA English
AB A review presents various examples of **pneumococcal** protein vaccine antigens [i.e, **pneumococcal** surface protein A (**PspA**), PspC, pneumolysin, **pneumococcal** surface antigen A (PsaA), autolysin, neuraminidase and hyaluronidase, **pneumococcal** adhesion and virulence (PavA), histidine triad proteins, lipoproteins, and IgA1 protease]. The potential of **pneumococcal** proteins as carriers for polysaccharides is described, as well as the mucosal immunization with the whole, killed vaccine.
RE.CNT 131 THERE ARE 131 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 11 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 5
AN 2004:101872 BIOSIS
DN PREV200400102645
TI Effects of **PspA** and antibodies to **PspA** on activation and deposition of complement on the **pneumococcal** surface.
AU Ren, Bing [Reprint Author]; Szalai, Alexander J.; **Hollingshead, Susan K.**; Briles, David E.
CS 845 19th St. S., BBRB 658, Box 10, Birmingham, AL, 35294, USA
bing_ren@microbio.uab.edu
SO Infection and Immunity, (January 2004) Vol. 72, No. 1, pp. 114-122. print. ISSN: 0019-9567 (ISSN print).
DT Article
LA English
ED Entered STN: 18 Feb 2004
Last Updated on STN: 18 Feb 2004
AB Streptococcus pneumoniae infection is a frequent cause of pneumonia, otitis media, meningitis, and septicemia. **Pneumococcal** surface protein A (**PspA**) is an important virulence factor on the pathogen surface, and it is known to interfere with complement activation. In this study, flow cytometry was used to study the effects of **PspA** and antibodies to **PspA** on the deposition of complement C3 on the surface of a capsular type 3 strain, WU2, and its **PspA**- mutant, JY1119. Using naive mouse serum as a complement source, measurable deposition of C3 was observed within 4 min on **PspA**- **pneumococci**, and the amount of surface-bound C3 accumulated rapidly as the amount of serum was increased. In contrast, very little C3 was deposited on the **PspA**+ strain. In nonimmune mouse serum, the classical pathway was the dominant activation pathway triggered by **PspA**- **pneumococci**. Accordingly, EGTA blocked almost all of the complement activation. Moreover, a significant amount of C3 was still deposited on the **PspA**- strain when serum from factor B-deficient mice was used. This deposition was not observed on the **PspA**+ **pneumococci**, indicating that **PspA** may inhibit complement deposition via the classical pathway. Furthermore, under the conditions we tested, **PspA** also inhibited C3 deposition when the classical pathway was initiated by antibodies to capsular polysaccharide. Antibodies to **PspA** could overcome the anticomplementary effect of **PspA**, allowing for increased complement activation and C3 deposition onto **PspA**+ bacteria.

L8 ANSWER 12 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 6
AN 2003:549966 BIOSIS
DN PREV200300550214

TI Strain selection of **pneumococcal** surface proteins.
AU Becker, Robert S. [Inventor, Reprint Author]; Briles, David E. [Inventor]; **Hollingshead, Susan** [Inventor]
CS ASSIGNEE: The UAB Research Foundation
PI US 6638516 20031028
SO Official Gazette of the United States Patent and Trademark Office Patents, (Oct 28 2003) Vol. 1275, No. 4. http://www.uspto.gov/web/menu/patdata.html . e-file.
ISSN: 0098-1133 (ISSN print).
DT Patent
LA English
ED Entered STN: 19 Nov 2003
Last Updated on STN: 19 Nov 2003
AB The present invention relates to vaccine composition(s) comprising at least two PspAs from strains selected from at least one family, the family being defined by PspAs from strains belonging to the family having greater than or equal to 50% homology in aligned sequences of a C-terminal region of an alpha helical region of **PspA**. Additionally, the families are further comprised of clades, wherein PspAs from strains which belong to a clade exhibit at least 75% sequence homology in aligned sequences of the C-terminal region of the alpha helix of **PspA**. Vaccine compositions of the present invention preferably comprise a minimum of 4 and a maximum of 6 strains representing a single clade each, and the at least two PspAs are optionally serologically or broadly cross-reactive.

L8 ANSWER 13 OF 46 USPATFULL on STN
AN 2003:85835 USPATFULL
TI **PNEUMOCOCCAL** SURFACE PROTEIN C (PSPC), EPITOPIC REGIONS AND STRAIN SELECTION THEREOF, AND USES THEREFOR
IN BRILES, DAVID E., BIRMINGHAM, AL, UNITED STATES
HOLLINGSHEAD, SUSAN K., BIRMINGHAM, AL, UNITED STATES
BROOKS-WALTER, ALEXIS, BIRMINGHAM, AL, UNITED STATES
PA NIXON PEABODY LLP (U.S. corporation)
PI US 2003059438 A1 20030327
AI US 1999-298523 A1 19990423 (9)
PRAI US 1998-82728P 19980423 (60)
DT Utility
FS APPLICATION
LREP Michael L Goldman, NIXON PEABODY LLP, Clinton Square, P O Box 31051, Rochester, NY, 14603
CLMN Number of Claims: 27
ECL Exemplary Claim: 1
DRWN 50 Drawing Page(s)
LN.CNT 1957
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed and claimed are: epitopic regions of **Pneumococcal** Surface Protein C or "PspC", different clades of PspC, isolated and/or purified nucleic acid molecules such as DNA encoding a fragment or portion of PspC such as an epitopic region of PspC or at least one epitope of PspC, uses for such nucleic acid molecules, e.g., to detect the presence of PspC or of S. pneumoniae by detecting a nucleic acid molecule therefor in a sample such as by amplification and/or a polymerase chain reaction, vectors or plasmids which contain and/or express such nucleic acid molecles, e.g., in vitro or in vivo, immunological, immunogenic or vaccine compositions including at least one PspC and/or a portion thereof (such as at least one epitopic region of at least one PspC and/or at least one polypeptide encoding at least one epitope of at least one PspC), either alone or in further combination with at least one second **pneumococcal** antigen, such as at least one different PspC and/or a fragment thereof and/or at least one **PspA** and/or at least one epitopic region of at least one **PspA** and/or at least one polypeptide including at least one epitope of **PspA**. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approximately the same amounts, as **PspA** . Thus, the invention further provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compositions.

L8 ANSWER 14 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 7
AN 2003:223669 BIOSIS
DN PREV200300223669
TI Effects of zinc deficiency and **pneumococcal** surface protein a immunization on zinc status and the risk of severe infection in mice.
AU Strand, Tor A. [Reprint Author]; **Hollingshead, Susan K.**; Julshamn, Kare; Briles, David E.; Blomberg, Bjorn; Sommerfelt, Halvor
CS Centre for International Health, University of Bergen, N-5021, Bergen, Norway
Tor.Strand@cih.uib.no
SO Infection and Immunity, (April 2003) Vol. 71, No. 4, pp. 2009-2013. print. ISSN: 0019-9567 (ISSN print).
DT Article
LA English
ED Entered STN: 7 May 2003
Last Updated on STN: 7 May 2003
AB Streptococcus pneumoniae is a major cause of illness and death in children in developing countries. In these children, zinc deficiency is associated with an increased risk of acute respiratory tract infections, which can be reduced by daily zinc administration. Severe infections decrease zinc levels in plasma and may thereby move individuals with preexisting low zinc stores into a vicious cycle of infection and unavailable zinc. **Pneumococcal** surface protein A (**PspA**) has emerged as a promising vaccine candidate, and immunization with this antigen protects animals from **pneumococcal** infection. In an animal experiment, we measured the effect of zinc depletion on the immune response to parenterally administrated **PspA** and assessed the effect of this **PspA** vaccination and zinc depletion on the severity of **pneumococcal** infection and on zinc status. Mice were kept on different diets for 5 weeks, immunized twice 14 days apart, and challenged intranasally with S. pneumoniae. Mice on the zinc-deficient diet showed substantially reduced immune responses to **PspA**, more extensive **pneumococcal** colonization in the nasal mucosa, more severe infections, and an increased risk of death. **PspA** immunization reduced the risk of severe disease, and the reduction in severity was reflected in substantially reduced zinc depletion from bones.

L8 ANSWER 15 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 8
AN 2003:172165 BIOSIS
DN PREV200300172165
TI Regions of **PspA**/EF3296 best able to elicit protection against Streptococcus pneumoniae in a murine infection model.
AU Roche, Hazeline; Hakansson, Anders; **Hollingshead, Susan K.**; Briles, David E. [Reprint Author]
CS Department of Microbiology, University of Alabama at Birmingham, 845 19th St. South, BBRB-662 Box 10, Birmingham, AL, 35294, USA
dbriles@uab.edu
SO Infection and Immunity, (March 2003) Vol. 71, No. 3, pp. 1033-1041. print. ISSN: 0019-9567 (ISSN print).
DT Article
LA English
ED Entered STN: 2 Apr 2003
Last Updated on STN: 2 Apr 2003
AB **Pneumococcal** surface protein A (**PspA**) can elicit protection against Streptococcus pneumoniae in mouse infection models. **PspA** is classified by serology and amino acid sequence into two major families that are divided by sequence into five clades. The most variable portion of the molecule is the alpha-helical domain, which comprises the N-terminal half of **PspA**. Prior studies of a family 1 **PspA** protein observed that protective antibodies are reactive with epitopes in the alpha-helical domain and that most cross-protective epitopes mapped to the 108 most C-terminal amino acids of the alpha-helical region. In these studies, we have used six overlapping recombinant fragments of family 2, clade 3 **PspA**/EF3296 to map the protection-eliciting regions of its alpha-helical domain. The three fragments, which included the 104 most C-terminal amino acids of the alpha-helical domain (314 to 418), could each elicit protection against

EF3296. A fragment comprising amino acids 75 to 305 failed to elicit significant protection. A fragment containing amino acids 1 to 115 elicited protection against EF3296 in BALB/c mice but not in CBA/N mice. All three fragments containing amino acids 314 to 418 were able to elicit cross-protection against **pneumococci** expressing **PspA** proteins of clades 2, 3, 4, and 5. Cross-protection elicited by these three fragments was easier to demonstrate in CBA/N mice than in BALB/c mice. The 1-to-115 fragment, however, elicited some cross-protection against clades 2 and 4 in BALB/c mice but not in CBA/N mice. These studies provide support for the importance of the C-terminal 104 and N-terminal 115 amino acids of the alpha-helical region of **PspA** in the elicitation of cross-protection.

L8 ANSWER 16 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 9
AN 2003:204158 BIOSIS
DN PREV200300204158
TI Immunogenic protein contaminants in **pneumococcal** vaccines.
AU Yu, Jigui; Briles, David E.; Englund, Janet A.; **Hollingshead, Susan K.**; Glezen, W. Paul; Nahm, Moon H. [Reprint Author]
CS Dept. of Pathology, University of Alabama at Birmingham, 845 19th St. S, Bevill Biomedical Research Bldg., Rm. 614, Birmingham, AL, 35294, USA
nahm@uab.edu
SO Journal of Infectious Diseases, (15 March 2003) Vol. 187, No. 6, pp. 1019-1023. print.
CODEN: JIDIAQ. ISSN: 0022-1899.
DT Article
LA English
ED Entered STN: 23 Apr 2003
Last Updated on STN: 23 Apr 2003
AB Currently available **pneumococcal** vaccines were examined for contamination by **pneumococcal** surface protein A (**PspA**) and **pneumococcal** surface adhesin A (PsaA). **PspA** could be detected in some (but not all) lots of 23-valent polysaccharide vaccine. Many lots of **pneumococcal** vaccines, including the heptavalent conjugate vaccine, were found to elicit small (but variable) antibody responses to **PspA**, PsaA, or both. The degree of contamination was highly variable, and this should be considered in **pneumococcal** vaccine evaluations or when capsular polysaccharide is used for **pneumococcal** antibody assays.

L8 ANSWER 17 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 10
AN 2003:478617 BIOSIS
DN PREV200300478617
TI Immunizations with **pneumococcal** surface protein A and pneumolysin are protective against pneumonia in a murine model of pulmonary infection with Streptococcus pneumoniae.
AU Briles, David E. [Reprint Author]; **Hollingshead, Susan K.**; Paton, James C.; Ades, Edwin W.; Novak, Lea; van Ginkel, Frederik W.; Benjamin, William H. Jr.
CS University of Alabama at Birmingham, 845 19th St. South, BBRB 658, Birmingham, AL, 35294-2170, USA
dbriles@uab.edu
SO Journal of Infectious Diseases, (1 August 2003) Vol. 188, No. 3, pp. 339-348. print.
CODEN: JIDIAQ. ISSN: 0022-1899.
DT Article
LA English
ED Entered STN: 15 Oct 2003
Last Updated on STN: 15 Oct 2003
AB Intranasal infection of mice with certain strains of capsular group 19 Streptococcus pneumoniae can result in focal pneumonia in the absence of bacteremia. Using this model of murine pneumonia, we demonstrated that immunization with recombinant forms of either **pneumococcal** surface protein A (**PspA**) or PdB (a genetically detoxified derivative of pneumolysin) elicited significant protection against focal pulmonary infection. This may be the first demonstration that a proposed vaccine antigen can protect against **pneumococcal** pneumonia. The

best protection was obtained by immunizing mice with a mixture of **PspA** and PdB, indicating that the protection elicited by these antigens can complement each other. This result is in agreement with previous studies that used **pneumococcal** sepsis and nasal colonization models and demonstrate that the best protein vaccines for prevention of infection may be those that include more than one protection-eliciting **pneumococcal** protein.

L8 ANSWER 18 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2004:72875 BIOSIS
DN PREV200400072020
TI Role of RANTES in **pneumococcal** immunopathogenesis.
AU Palaniappan, Ravichandran [Reprint Author]; Singh, Shailesh [Reprint Author]; Singh, Udai P. [Reprint Author]; Briles, David E.; **Hollingshead, Susan K.**; Paton, James C.; Taub, Dennis D.; Ades, Edwin W.; Lillard, James W. Jr. [Reprint Author]
CS Microbiology, Biochemistry, and Immunology, Morehouse School of Medicine, 720 Westview Drive, Atlanta, GA, 30310, USA
SO FASEB Journal, (April 14 2003) Vol. 17, No. 7, pp. C85. print.
Meeting Info.: 90th Anniversary Annual Meeting of the American Association of Immunologists. Denver, CO, USA. May 06-10, 2003. American Association of Immunologists.
ISSN: 0892-6638 (ISSN print).
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 4 Feb 2004
Last Updated on STN: 4 Feb 2004

L8 ANSWER 19 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 11
AN 2003:94698 BIOSIS
DN PREV200300094698
TI Both family 1 and family 2 **PspA** proteins can inhibit complement deposition and confer virulence to a capsular serotype 3 strain of Streptococcus pneumoniae.
AU Ren, Bing [Reprint Author]; Szalai, Alexander J.; Thomas, Orlanda; **Hollingshead, Susan K.**; Briles, David E.
CS 845 19th St. S., BBRB 658, Box 10, Birmingham, AL, 35294, USA
bing_ren@microbio.uab.edu
SO Infection and Immunity, (January 2003) Vol. 71, No. 1, pp. 75-85. print.
ISSN: 0019-9567 (ISSN print).
DT Article
LA English
ED Entered STN: 12 Feb 2003
Last Updated on STN: 12 Feb 2003
AB **Pneumococcal** surface protein A (**PspA**), a virulence factor of Streptococcus pneumoniae, is exceptionally diverse, being classified into two major families which are over 50% divergent by sequence analysis. A family 1 **PspA** from strain WU2 was previously shown to impede the clearance of **pneumococci** from mouse blood and to interfere with complement deposition on the bacterial surface. To determine whether a family 2 **PspA** can perform the same role as family 1 **PspA**, the family 1 **PspA** (from strain WU2) was replaced with a family 2 **PspA** (from strain TIGR4) by molecular genetic methods to make an isogenic pair of strains expressing different **PspA** proteins. Surface binding of lactoferrin and interference with C3 deposition by the two types of **PspA** proteins were determined by flow cytometry, and virulence was assessed in a mouse bacteremia model. Although the family 2 **PspA** appeared to bind less human lactoferrin than did the family 1 **PspA**, both **PspA** proteins could interfere with complement deposition on the **pneumococcal** surface and could provide full virulence in the mouse infection model. A mutant form of the family 2 **PspA** with a deletion within the choline-binding region was also produced. **Pneumococci** with this mutant **PspA** failed to bind human lactoferrin even though the **PspA** was present on the **pneumococcal** surface. The mutant **PspA** only partially

interfered with complement deposition and moderately attenuated virulence. These results suggest that family 1 and family 2 **PspA** proteins play similar roles in virulence and that surface accessibility of **PspA** is important for their function.

L8 ANSWER 20 OF 46 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:210695 CAPLUS
DN 140:405112
TI **Pneumococcal** proteins that may constitute the next generation vaccine for **pneumococcal** disease
AU Briles, David E.; **Hollingshead, Susan K.**; Crain, Marilyn J.; Ren, Bing; Mirza, Shaper; Watt, James; Johnston, Jason
CS Department of Microbiology, University of Alabama at Birmingham, Birmingham, AL, USA
SO International Congress Series (2003), 1257(Current Topics on Tonsils and Mucosal Barriers of Upper Airways), 27-31
CODEN: EXMDA4; ISSN: 0531-5131
PB Elsevier Science B.V.
DT Journal; General Review
LA English
AB A review. Cross-reactive "common" **pneumococcal** antigens offer an attractive alternative, or complement, to polysaccharides and polysaccharide-protein conjugate vaccines. These common antigens should be protective against strains of a wider range of capsular types than can be achieved with conjugate vaccines. Common protein antigens would be expected to be highly immunogenic in young children and should be able to be manufactured relatively inexpensively using recombinant techniques. It is hoped that these antigens will lead to a vaccine(s) that could have application worldwide, even in the poorest developing countries where the rates of fatal **pneumococcal** disease in children are the highest.
RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 21 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 12
AN 2003:85946 BIOSIS
DN PREV200300085946
TI **Pneumococcal** surface proteins and uses thereof.
AU Briles, David E. [Inventor, Reprint Author]; McDaniel, Larry S. [Inventor]; Swiatlo, Edwin [Inventor]; Yother, Janet [Inventor]; Crain, Marilyn J. [Inventor]; **Hollingshead, Susan** [Inventor]; Tart, Rebecca [Inventor]; Brooks-Walter, Alexis [Inventor]
CS Ridgland, MS, USA
ASSIGNEE: University of Alabama at Birmingham
PI US 6500613 20021231
SO Official Gazette of the United States Patent and Trademark Office Patents, (Dec 31 2002) Vol. 1265, No. 5. http://www.uspto.gov/web/menu/patdata.html . e-file.
ISSN: 0098-1133 (ISSN print).
DT Patent
LA English
ED Entered STN: 6 Feb 2003
Last Updated on STN: 6 Feb 2003
AB The present invention relates to **pneumococcal** genes, portions thereof, expression products therefrom and uses of such genes, portions and products; especially to genes of Streptococcus pneumoniae, e.g., the gene encoding **pneumococcal** surface protein A (**PspA**), i.e., the **pspA** gene, the gene encoding **pneumococcal** surface protein A-like proteins, such as **pspA**-like genes, e.g., the gene encoding **pneumococcal** surface protein C (PspC), i.e., the pspC gene, portions of such genes, expression products therefrom, and the uses of such genes, portions thereof and expression products therefrom.

L8 ANSWER 22 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 13
AN 2002:296995 BIOSIS
DN PREV200200296995
TI Role of **pneumococcal** surface protein C in nasopharyngeal

carriage and pneumonia and its ability to elicit protection against carriage of Streptococcus pneumoniae.
AU Balachandran, Priya [Reprint author]; Brooks-Walter, Alexis; Virolainen-Julkunen, Anni; **Hollingshead, Susan K.**; Briles, David E.
CS Department of Medicine, University of California, San Francisco, San Francisco, CA, 94143, USA
priyab@itsa.ucsf.edu
SO Infection and Immunity, (May, 2002) Vol. 70, No. 5, pp. 2526-2534. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
ED Entered STN: 15 May 2002
Last Updated on STN: 15 May 2002
AB Previous studies suggested that PspC is important in adherence and colonization within the nasopharynx. In this study, we conducted mutational studies to further identify the role PspC plays in the pathogenesis of **pneumococci**. pspC and/or **pspA** was insertionally inactivated in a serotype 2 Streptococcus pneumoniae strain and in a serotype 19 S. pneumoniae strain. In the mouse colonization model, **pneumococcal** strains with mutations in pspC were significantly attenuated in their abilities to colonize. In a mouse pneumonia model, strains with mutations in pspC were unable to infect or multiply within the lung. Using reverse transcriptase PCR we were able to demonstrate that pspC is actively transcribed in vivo, when the bacteria are growing in the nasal cavity and in the lungs. In the bacteremia model, a strain mutated for pspC alone behaved like the wild type, but the absence of both pspC and **pspA** caused accelerated clearance of the bacteria. Intranasal immunization with PspC with cholera toxin subunit B as an adjuvant protected against intranasal challenge. Evidence was also obtained that revertants that spontaneously acquired PspC expression could multiply and colonize the nasal tissue. This latter finding strongly indicates that **pneumococci** are actively metabolizing and growing while in the nasopharynx.

L8 ANSWER 23 OF 46 USPATFULL on STN
AN 2001:139158 USPATFULL
TI **Pneumococcal** surface protein C (PspC), epitopic regions and strain selection thereof, and uses therefor
IN Briles, David E., Birmingham, AL, United States
Hollingshead, Susan K., Birmingham, AL, United States
Brooks-Walter, Alexis, Birmingham, AL, United States
PI US 2001016200 A1 20010823
AI US 2000-748875 A1 20001226 (9)
RLI Division of Ser. No. US 1999-298523, filed on 23 Apr 1999, PENDING
PRAI US 1998-82728P 19980423 (60)
DT Utility
FS APPLICATION
LREP FROMMER LAWRENCE & HAUG, 745 FIFTH AVENUE, NEW YORK, NY, 10151
CLMN Number of Claims: 27
ECL Exemplary Claim: 1
DRWN 50 Drawing Page(s)
LN.CNT 1911
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed and claimed are: epitopic regions of **Pneumococcal** Surface Protein C or "PspC", different clades of PspC, isolated and/or purified nucleic acid molecules such as DNA encoding a fragment or portion of PspC such as an epitopic region of PspC or at least one epitope of PspC, uses for such nucleic acid molecules, e.g., to detect the presence of PspC or of S. pneumoniae by detecting a nucleic acid molecule therefor in a sample such as by amplification and/or a polymerase chain reaction, vectors or plasmids which contain and/or express such nucleic acid molecles, e.g., in vitro or in vivo, immunological, immunogenic or vaccine compositions including at least one PspC and/or a portion thereof (such as at least one epitopic region of at least one PspC and/or at least one polypeptide encoding at least one epitope of at least one PspC), either alone or in further combination with at least one second **pneumococcal** antigen, such as at least one different PspC and/or a fragment thereof and/or at

least one **PspA** and/or at least one epitopic region of at least one **PspA** and/or at least one polypeptide including at least one epitope of **PspA**. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approximately the same amounts, as **PspA** . Thus, the invention further provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compositions.

L8 ANSWER 24 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 14
AN 2001:543217 BIOSIS
DN PREV200100543217
TI Intranasal vaccination with **pneumococcal** surface protein A and interleukin-12 augments antibody-mediated opsonization and protective immunity against Streptococcus pneumoniae infection.
AU Arulanandam, Bernard P. [Reprint author]; Lynch, Joyce M.; Briles, David E.; **Hollingshead, Susan**; Metzger, Dennis W.
CS Center for Immunology and Microbial Disease, Albany Medical College, 47 New Scotland Ave., Albany, NY, 12208, USA
metzged@mail.amc.edu
SO Infection and Immunity, (November, 2001) Vol. 69, No. 11, pp. 6718-6724. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
ED Entered STN: 21 Nov 2001
Last Updated on STN: 25 Feb 2002
AB Streptococcus pneumoniae is a major pathogen in humans that enters the host primarily through the respiratory tract. Targeting mucosal surfaces directly may therefore be an optimal approach for vaccination to prevent bacterial colonization and invasive disease. We have previously demonstrated the effectiveness of interleukin-12 (IL-12) delivered intransally (i.n.) as an antiviral respiratory adjuvant. In this study, we examined the effects of i.n. IL-12 treatment on induction of protective humoral immunity against S. pneumoniae. Immunization i.n. with **pneumococcal** surface protein A (**PspA**) and IL-12 resulted in enhanced lung IL-10 mRNA expression and marked augmentation of respiratory and systemic immunoglobulin G1 (IgG1), IgG2a, and IgA antibody levels compared to those in animals receiving **PspA** alone. In addition, i.n. vaccination with **PspA** and IL-12 provided increased protection against nasopharyngeal carriage. Flow cytometric analysis revealed a threefold increase in antibody-mediated, complement-independent opsonic activity in the sera of **PspA**- and IL-12-treated animals, which was mainly contributed by IgG2a and, to a lesser extent, IgA. Passive transfer of these immune sera conferred complete protection from death upon systemic **pneumococcal** challenge. These findings demonstrate the effectiveness of combining **PspA** and IL-12 at mucosal sites to achieve optimal antibody-mediated opsonization and killing of S. pneumoniae.

L8 ANSWER 25 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2001:130120 BIOSIS
DN PREV200100130120
TI Streptococcus pneumoniae: New tools for an old pathogen.
AU **Hollingshead, Susan K.** [Reprint author]; Briles, David E.
CS Department of Microbiology, University of Alabama at Birmingham, Birmingham, AL, 35294, USA
hollings@uab.edu
SO Current Opinion in Microbiology, (February, 2001) Vol. 4, No. 1, pp. 71-77. print.
ISSN: 1369-5274.
DT Article
LA English
ED Entered STN: 14 Mar 2001
Last Updated on STN: 15 Feb 2002
AB The **pneumococcus** is one of the longest-known pathogens. It has been instrumental to our understanding of biology in many ways, such as in

the discovery of the Gram strain and the identification of nucleic acid as the hereditary material. Despite major advances in our understanding of **pneumococcal** pathogenesis, the need for vaccines and antibiotics to combat this pathogen is still vital. Genomics is beginning to uncover new virulence factors to advance this process, and it is enabling the development of DNA chip technology, which will permit the analysis of gene expression in specific tissues and in virulence regulatory circuits.

L8 ANSWER 26 OF 46 USPATFULL on STN
AN 2000:24298 USPATFULL
TI Mucosal immunogens for novel vaccines
IN Russell, Michael William, Birmingham, AL, United States
Hajishengallis, Georgios, Birmingham, AL, United States
Hollingshead, Susan K., Birmingham, AL, United States
Wu, Hong-Yin, Hoover, AL, United States
Michalek, Suzanne Mary, Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 6030624 20000229
AI US 1997-912180 19970815 (8)
PRAI US 1996-24074P 19960816 (60)
DT Utility
FS Granted
EXNAM Primary Examiner: Mosher, Mary E.
LREP Adler, Benjamin Aaron
CLMN Number of Claims: 11
ECL Exemplary Claim: 1
DRWN 25 Drawing Figure(s); 26 Drawing Page(s)
LN.CNT 1925
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention provides chimeric proteins such as Salivary Binding Protein (SBR) coupled to the B subunit of cholera toxin. Such a chimeric protein, when expressed in attenuated Salmonella typhymurium produces significant increases in serum IgG and salivary IgA antibody levels after oral immunization. In another embodiment of the present invention, the recombinant plasmid contains a salivary binding protein-cholera toxin A2/B chimeric protein expressed in E. coli. Intragastric immunization of SBR coupled to CTB in this chimeric protein form leads to increased antigen responsive T cells. In another embodiment of the present invention, the recombinant plasmid contains a salivary binding protein-cholera toxin.sup.ΔA1 chimeric protein expressed in Salmonella typhimurium. Oral immunization using this recombinant plasmid results in increased serum IgG responses to antigen. Oral immunization using this recombinant plasmid also resulted in increased salivary IgA antibody responses to antigen.

L8 ANSWER 27 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 15
AN 2000:474386 BIOSIS
DN PREV200000474386
TI Diversity of **PspA**: Mosaic genes and evidence for past recombination in Streptococcus pneumoniae.
AU **Hollingshead, Susan K.** [Reprint author]; Becker, Robert; Briles, David E.
CS Department of Microbiology, University of Alabama at Birmingham, BBRB654, Birmingham, AL, 35294, USA
SO Infection and Immunity, (October, 2000) Vol. 68, No. 10, pp. 5889-5900. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
ED Entered STN: 1 Nov 2000
Last Updated on STN: 10 Jan 2002
AB **Pneumococcal** surface protein A (**PspA**) is a serologically variable protein of Streptococcus pneumoniae. Twenty-four diverse alleles of the **pspA** gene were sequenced to investigate the genetic basis for serologic diversity and to evaluate the potential of diversity to have an impact on **PspA**'s use in human vaccination. The 24 **pspA** gene sequences from unrelated strains revealed two

major allelic types, termed "families," subdivided into clades. A highly mosaic gene structure was observed in which individual mosaic sequence blocks in PspAs diverged from each other by over 20% in many cases. This level of divergence exceeds that observed for blocks in the penicillin-binding proteins of S. pneumoniae or in many cross-species comparisons of gene loci. Conversely, because the mosaic pattern is so complex, each pair of **pspA** genes also has numerous shared blocks, but the position of conserved blocks differs from gene pair to gene pair. A central region of **pspA**, important for eliciting protective antibodies, was found in six clades, which each diverge from the other clades by >20%. Sequence relationships among the 24 alleles analyzed over three windows were discordant, indicating that intragenic recombination has occurred within this locus. The extensive recombination which generated the mosaic pattern seen in the **pspA** locus suggests that natural selection has operated in the history of this gene locus and underscores the likelihood that **PspA** may be important in the interaction between the **pneumococcus** and its human host.

L8 ANSWER 28 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 16
AN 2000:506250 BIOSIS
DN PREV200000506250
TI **Pneumococcal pspA** sequence types of prevalent multiresistant **pneumococcal** strains in the United States and of internationally disseminated clones.
AU Beall, Bernard [Reprint author]; Gherardi, Giovanni; Facklam, Richard R.; **Hollingshead, Susan K.**
CS Centers for Disease Control and Prevention, 1600 Clifton Rd., NE, Mailstop C02, Atlanta, GA, 30333, USA
SO Journal of Clinical Microbiology, (October, 2000) Vol. 38, No. 10, pp. 3663-3669. print.
CODEN: JCMIDW. ISSN: 0095-1137.
DT Article
LA English
ED Entered STN: 22 Nov 2000
Last Updated on STN: 11 Jan 2002
AB In a recent genotypic survey of beta-lactam-resistant **pneumococci** recovered in different areas of United States during 1997, eight clonal types that each represented 3 to 40 isolates accounted for 134 of 144 isolates (G. Gherardi, C. Whitney, R. Facklam, and B. Beall, J. Infect. Dis. 181:216-229, 2000). We determined the degree of **pspA** gene diversity among these 134 isolates and for 11 previously characterized internationally disseminated multiresistant strains. Thirty-four different **pspA** restriction profiles were determined for an amplicon encompassing the variable portion of the structural gene that encodes the surface-exposed domain of **PspA** and a variable-length proline-rich putative cell wall-associated domain. These restriction profiles closely correlated with those of 33 different **pspA** sequence types of an approximately 230-residue region corresponding to residues 182 to 410 of the strain Rx1 **PspA**. These residues encompass a 100-residue clade-defining region known to contain cross-protective epitopes for which 17 sequence types were found. Distinct, conserved **pspA** sequence types were found for the majority of strains within seven of the eight U.S. clonal types assessed, while one pulsed-field gel electrophoresis type was represented by isolates of three distinct **PspA** clades. Sequence typing of **pspA** provides an added level of specificity in the subtyping of isolates and is a necessary first step in determining the components needed in a **PspA** vaccine which could elicit effective cross-protective coverage.

L8 ANSWER 29 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 17
AN 2000:222893 BIOSIS
DN PREV200000222893
TI Immunization of mice with combinations of **pneumococcal** virulence proteins elicits enhanced protection against challenge with Streptococcus pneumoniae.
AU Ogunniyi, A. David; Folland, Rebekah L.; Briles, David E.;

Hollingshead, Susan K.; Paton, James C. [Reprint author]
CS Molecular Microbiology Unit, Women's and Children's Hospital, 72 King William Rd., North Adelaide, SA, 5006, Australia
SO Infection and Immunity, (May, 2000) Vol. 68, No. 5, pp. 3028-3033. print. CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
ED Entered STN: 31 May 2000
Last Updated on STN: 5 Jan 2002
AB The vaccine potential of a combination of three **pneumococcal** virulence proteins was evaluated in an active-immunization-intraperitoneal-challenge model in BALB/c mice, using very high challenge doses of Streptococcus pneumoniae. The proteins evaluated were a genetic toxoid derivative of pneumolysin (PdB), **pneumococcal** surface protein A (**PspA**), and a 37-kDa metal-binding lipoprotein referred to as PsaA. Mice immunized with individual proteins or combinations thereof were challenged with high doses of virulent type 2 or type 4 **pneumococci**. The median survival times for mice immunized with combinations of proteins, particularly PdB and **PspA**, were significantly longer than those for mice immunized with any of the antigens alone. A similar effect was seen in a passive protection model. Thus, combinations of **pneumococcal** proteins may provide the best non-serotype-dependent protection against S. pneumoniae.

L8 ANSWER 30 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 18
AN 2000:174346 BIOSIS
DN PREV200000174346
TI Immunization of healthy adults with a single recombinant **pneumococcal** surface protein A (**PspA**) variant stimulates broadly cross-reactive antibodies to heterologous **PspA** molecules.
AU Nabors, Gary S. [Reprint author]; Braun, Patricia A.; Herrmann, Diane J.; Heise, Martha L.; Pyle, Derek J.; Gravenstein, Stefan; Schilling, Margot; Ferguson, Laura M.; **Hollingshead, Susan K.**; Briles, David E.; Becker, Robert S.
CS Aventis Pasteur, Discovery Drive, Swiftwater, PA, 18370, USA
SO Vaccine, (March 6, 2000) Vol. 18, No. 17, pp. 1743-1754. print. CODEN: VACCDE. ISSN: 0264-410X.
DT Article
LA English
ED Entered STN: 3 May 2000
Last Updated on STN: 4 Jan 2002
AB **Pneumococcal** surface protein A (**PspA**) is a highly variable protein found on all strains of **pneumococci**. To be successful, a **PspA**-based vaccine for S. pneumoniae must induce antibodies that are broadly cross-reactive. To address whether cross-reactive antibodies could be induced in man, we evaluated serum from adults immunized with recombinant clade 2 **PspA** from strain Rx1. Immunization with 5-125 mug rPspA lead to a significant increase in circulating anti-**PspA** antibodies, as well as antibodies reactive to heterologous rPspA molecules. Increased binding of post-immune sera to 37 **pneumococcal** strains expressing a variety of **PspA** and capsule types was observed, versus pre-immune sera. The extent of cross-clade reactivity of human anti-rPspA followed roughly the amount of sequence homology to the non-clade 2 antigens. It is hypothesized that priming of humans by natural exposure to S. pneumoniae contributes to the breadth of the cross-reactivity of antibody to **PspA**.

L8 ANSWER 31 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 19
AN 2000:180678 BIOSIS
DN PREV200000180678
TI The potential to use **PspA** and other **pneumococcal** proteins to elicit protection against **pneumococcal** infection.
AU Briles, David E. [Reprint author]; **Hollingshead, Susan**; Brooks-Walter, Alexis; Nabors, Gary S.; Ferguson, Laura; Schilling, Margo; Gravenstein, Stephan; Braun, Pat; King, Janice; Swift, Amy
CS Department of Microbiology, University of Alabama at Birmingham, 658 BBLB,

845 19th Street South, Birmingham, AL, 35294, USA
SO Vaccine, (Feb. 25, 2000) Vol. 18, No. 16, pp. 1707-1711. print.
CODEN: VACCDE. ISSN: 0264-410X.
DT Article
LA English
ED Entered STN: 11 May 2000
Last Updated on STN: 4 Jan 2002
AB **Pneumococcal** proteins, alone, in combination with each other, or in combination with capsular polysaccharide-protein conjugates may be useful **pneumococcal** vaccine components. Four proteins with a potential for use in vaccines are **PspA**, pneumolysin, PsaA, and PspC. In a mouse model of carriage, PsaA and PspC were the most efficacious vaccine proteins. Of these, PsaA was the best at eliciting protection against carriage. However, a combination of **PspA** and pneumolysin may elicit stronger immunity to pulmonary infection and possibly sepsis than either protein alone. Recently, a phase one trial of a recombinant family 1 **PspA** was completed in man. **PspA** was observed to be safe and immunogenic. Injection of 0.1 ml of immune serum diluted to 1/400 was able to protect mice from fatal infection with S. pneumoniae. Under these conditions, pre-immune serum was not protective. The immune human serum protected mice from infections with **pneumococci** expressing either of the major **PspA** families (1 and 2) and both of the **pneumococcal** capsular types tested: 3 and 6.

L8 ANSWER 32 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 20
AN 2001:18577 BIOSIS
DN PREV200100018577
TI Immunization of humans with recombinant **pneumococcal** surface protein a (rPspA) elicits antibodies that passively protect mice from fatal infection with Streptococcus pneumoniae bearing heterologous **PspA**.
AU Briles, David E. [Reprint author]; **Hollingshead, Susan K.**; King, Janice; Swift, Amy; Braun, Patricia A.; Park, Moon K.; Ferguson, Laura M.; Nahm, Moon H.; Nabors, Gary S.
CS 1530 3rd Ave., S., BBRB658, Birmingham, AL, 35294, USA
dbriles@uab.edu
SO Journal of Infectious Diseases, (December, 2000) Vol. 182, No. 6, pp. 1694-1701. print.
CODEN: JIDIAQ. ISSN: 0022-1899.
DT Article
LA English
ED Entered STN: 27 Dec 2000
Last Updated on STN: 27 Dec 2000
AB **Pneumococcal** surface protein A (**PspA**), a cross-reactive protein expressed by all **pneumococci**, is known to elicit an antibody in animals that can passively protect mice from infection with Streptococcus pneumoniae. A phase I trial with recombinant **PspA** showed the protein to be immunogenic in humans. Pre- and postimmune serum samples from this trial were examined, and human antibody to **PspA** could protect mice from **pneumococcal** infection. The serum samples of subjects immunized twice with 125 mug of **PspA** had >100 times as much antibody per milliliter as was required to consistently protect mice from fatal infection (1.3 mug/dose). At least 98% of PspAs fall into **PspA** sequence/serologic families 1 or 2. Human antibodies elicited by a family 1 **PspA** protected against infection with S. pneumoniae expressing either family 1 or 2 PspAs and with strains of all 3 capsular types tested: 3, 6A, and 6B. These studies suggest that **PspA** may have efficacy as a human vaccine.

L8 ANSWER 33 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 21
AN 2000:110102 BIOSIS
DN PREV200000110102
TI Intranasal immunization of mice with a mixture of the **pneumococcal** proteins PsaA and **PspA** is highly protective against nasopharyngeal carriage of Streptococcus pneumoniae.
AU Briles, David E. [Reprint author]; Ades, Eddie; Paton, James C.; Sampson,

Jacquelyn S.; Carlone, George M.; Huebner, Robert C.; Virolainen, Anni; Swiatlo, Edwin; **Hollingshead, Susan K.**

CS Department of Microbiology, UAB, 845 19th St. South, 658 Bevill Building, Birmingham, AL, 35294, USA

SO Infection and Immunity, (Feb., 2000) Vol. 68, No. 2, pp. 796-800. print. CODEN: INFIBR. ISSN: 0019-9567.

DT Article

LA English

ED Entered STN: 22 Mar 2000
Last Updated on STN: 3 Jan 2002

AB Acquisition of **pneumococci** is generally from carriers rather than from infected individuals. Therefore, to induce herd immunity against Streptococcus pneumoniae it will be necessary to elicit protection against carriage. Capsular polysaccharide-protein conjugates, **PspA**, and PsaA are known to elicit some protection against nasopharyngeal carriage of **pneumococci** but do not always completely eliminate carriage. In this study, we observed that PsaA elicited better protection than did **PspA** against carriage. Pneumolysin elicited no protection against carriage. Immunization with a mixture of PsaA and **PspA** elicited the best protection against carriage. These results indicate that **PspA** and PsaA may be useful for the elicitation of herd immunity in humans. As **PspA** and pneumolysin are known to elicit immunity to bacteremia and pneumonia, their inclusion in a mucosal vaccine may enable such a vaccine to prevent invasive disease as well as carriage.

L8 ANSWER 34 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 22

AN 2001:38017 BIOSIS

DN PREV200100038017

TI Production, characterization, and crystallization of truncated forms of **pneumococcal** surface protein A from Escherichia coli.

AU Lamani, Ejvis; McPherson, David T.; **Hollingshead, Susan K.**; Jedrzejas, Mark J. [Reprint author]

CS Department of Microbiology, University of Alabama at Birmingham, 933 19th Street South, 545 CHSB-19, Birmingham, AL, 35294, USA
jedrzejas@uab.edu

SO Protein Expression and Purification, (December, 2000) Vol. 20, No. 3, pp. 379-388. print. CODEN: PEXPEJ. ISSN: 1046-5928.

DT Article

LA English

ED Entered STN: 17 Jan 2001
Last Updated on STN: 12 Feb 2002

AB Streptococcus pneumoniae is a major bacterial pathogen that causes diseases such as pneumonia and meningitis in humans. One of the antigens of this organism is **pneumococcal** surface protein A (**PspA**). **PspA** is a virulence factor of the bacteria that has been shown to protect mice against **pneumococcal** infection. Among several domains of the protein, the aminoterminal part of **PspA** has been found to be a functional module which is essential for full **pneumococcal** infectivity. In order to investigate the properties of this protein, several internal fragments of the **pspA** gene were amplified from S. pneumoniae strain Rx1 using the polymerase chain reaction (PCR). The fragments were then cloned and expressed in Escherichia coli in a soluble form using the T7 RNA polymerase pET15b and pET21a vector systems. The size of these fragments ranges from 24 to 32 kDa corresponding to amino acids 67-272 (**PspA**-206), 1-236 (**PspA**-236), and 1-272 (**PspA**-272). The fragments were purified to homogeneity using nickel chelating affinity, size exclusion, and anion-exchange chromatographic methods. During the course of expression of some of the **PspA** constructs, a shorter fragment was coexpressed due to translational pausing and subsequent secondary translation initiation. Two of the constructs, **PspA**-206 and **PspA**-272, were also crystallized allowing for the initiation of a structural elucidation of **PspA**.

L8 ANSWER 35 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 23

AN 2000:103039 BIOSIS
DN PREV200000103039
TI Production and characterization of the functional fragment of **pneumococcal** surface protein A.
AU Jedrzejas, Mark J. [Reprint author]; **Hollingshead, Susan K.**; Lebowitz, Jacob; Chantalat, Laurent; Briles, David E.; Lamani, Ejvis
CS Department of Microbiology, University of Alabama at Birmingham, 933 19th Street South, 545 CHSB-19, Birmingham, AL, 35294, USA
SO Archives of Biochemistry and Biophysics, (Jan. 1, 2000) Vol. 373, No. 1, pp. 116-125. print.
CODEN: ABBIA4. ISSN: 0003-9861.
DT Article
LA English
ED Entered STN: 22 Mar 2000
Last Updated on STN: 3 Jan 2002
AB **Pneumococcal** surface protein A (**PspA**) is present on the cell wall of Streptococcus pneumoniae pathogen and has an antigenetically variable N-terminal domain. This aminoterminal domain is essential for full **pneumococcal** virulence, and monoclonal antibodies raised against it protect mice against **pneumococcal** infections. We have cloned and expressed a 34-kDa N-terminal fragment of **PspA** in Escherichia coli in a soluble form using the T7 RNA polymerase pET-20b vector system. Nickel chelate affinity purification followed by size exclusion and anion exchange chromatography yielded large amounts of pure and homogeneous protein. Analytical ultracentrifugation sedimentation velocity band and boundary studies showed that the molecule was present in aqueous solutions in a monomeric form with an axial shape ratio of approximately 1:12, typical of fibrous proteins. Sequence analyses indicated an alpha-helical coiled-coil structure for this monomeric molecule with only few loop-type breaks in helicity. The mostly alpha-helical structure of this **PspA** construct was consistent with circular dichroism spectroscopy data. Based on the ultracentrifugation studies, the circular dichroism spectra, and the **PspA**'s sequence analyses, two structural models for the amino-terminal part of the **PspA** molecule are proposed. The evident highly charged and polar character of the surface of the modeled structures suggests functional properties of **PspA** that are related to the prevention of S. pneumoniae interactions with the host complement system.

L8 ANSWER 36 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2001:84335 BIOSIS
DN PREV200100084335
TI The potential for using protein vaccines to protect against otitis media caused by Streptococcus pneumoniae.
AU Briles, David E. [Reprint author]; **Hollingshead, Susan K.**; Nabors, Gary S.; Paton, James C.; Brooks-Walter, Alexis
CS 1530 3rd Ave. South, BBRB 658, Birmingham, AL, 35294-2170, USA
dbriles@uab.edu
SO Vaccine, (8 December, 2000) Vol. 19, No. Supplement 1, pp. S87-S95. print.
CODEN: VACCDE. ISSN: 0264-410X.
DT Article
LA English
ED Entered STN: 14 Feb 2001
Last Updated on STN: 12 Feb 2002
AB Potential vaccine strategies against otitis media are to prevent (1) symptomatic infections in the middle ear and/or (2) carriage of **pneumococci** and thereby subsequent middle ear infections. The possibility of using immunity to virulence proteins of **pneumococci** to elicit immunity against **pneumococci** has been examined. **PspA** has been found to have efficacy against otitis media in animals. Vaccination with a mixture of PsaA and **PspA** has been observed to offer better protection against nasal carriage in mice, than vaccination with either protein alone. **PspA** and pneumolysin have been shown to elicit protection against invasive infections. The inclusion of a few of these proteins into the polysaccharide-protein conjugate vaccines may be able to enhance their efficacy against otitis media and might be able to constitute a successful all-protein

pneumococcal vaccine.

L8 ANSWER 37 OF 46 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 24
AN 1999:606909 CAPLUS
DN 131:241963
TI Streptococcal vaccines based on selection of cross-reactive **pneumococcal** surface proteins
IN Briles, David E.; **Hollingshead, Susan**; Becker, Robert
PA Uab Research Foundation, USA
SO U.S., 35 pp., Cont.-in-part of U. S. 5,579,768.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 19

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5955089	A	19990921	US 1996-710749	19960920
	JP 2002167399	A2	20020611	JP 2001-227943	19940419
	US 5679768	A	19971021	US 1995-465746	19950606
	CA 2267343	AA	19980326	CA 1997-2267343	19970922
	WO 9811915	A1	19980326	WO 1997-US16761	19970922
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9744287	A1	19980414	AU 1997-44287	19970922
	AU 726927	B2	20001123		
	EP 956043	A1	19991117	EP 1997-942626	19970922
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2000503676	T2	20000328	JP 1998-514944	19970922
	NZ 334811	A	20000929	NZ 1997-334811	19970922
	JP 2003002842	A2	20030108	JP 2002-119707	19970922
	NO 9901340	A	19990518	NO 1999-1340	19990319
	US 6638516	B1	20031028	US 1999-147875	19990524
	US 2004067237	A1	20040408	US 2003-674755	20030930
PRAI	US 1993-48896	B1	19930420		
	US 1995-465746	A2	19950606		
	US 1991-656773	B2	19910215		
	US 1992-835698	B2	19920212		
	JP 1994-80735	A3	19940419		
	US 1996-710749	A	19960920		
	JP 1998-514944	A3	19970922		
	WO 1997-US16761	W	19970922		
	US 1999-147875	A1	19990524		

AB The present invention relates to vaccine composition(s) comprising at least two **pneumococcal** surface protein A (**PspA**) proteins from strains selected from at least one family; the family being defined by PspAs from strains having greater than or equal to 50% homol. in aligned sequences of a C-terminal region of an alpha helical region of **PspA**. Addnl., the families are further comprised of clades, wherein PspAs from strains which belong to a clade exhibit at least 75% sequence homol. in aligned sequences of the C-terminal region of the alpha helix of **PspA**. Vaccine compns. of the present invention preferably comprise a min. of 4 and a maximum of 6 strains representing a single clade each, and the at least two PspAs are optionally serol. or broadly cross-reactive.

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 38 OF 46 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:690969 CAPLUS
DN 131:321533
TI Epitopic regions and strain selection of **pneumococcal** surface protein C from Streptococcus pneumoniae

IN Briles, David E.; **Hollingshead, Susan K.**; Brooks-Walter, Alexis
PA University of Alabama at Birmingham, USA
SO PCT Int. Appl., 109 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9953940	A1	19991028	WO 1999-US8895	19990423
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2328399	AA	19991028	CA 1999-2328399	19990423
AU 9937584	A1	19991108	AU 1999-37584	19990423
AU 770378	B2	20040219		
EP 1073450	A1	20010207	EP 1999-919991	19990423
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002516251	T2	20020604	JP 2000-544343	19990423
US 2003059438	A1	20030327	US 1999-298523	19990423
US 2001016200	A1	20010823	US 2000-748875	20001226
US 2005196405	A1	20050908	US 2003-341201	20030113
PRAI US 1998-82728P	P	19980423		
US 1999-298523	A3	19990423		
WO 1999-US8895	W	19990423		
US 2000-748875	B1	20001226		

AB Immunization with purified **pneumococcal** surface protein C (PspC) is able to elicit protection against sepsis, and this protection is apparently mediated by antibodies cross-reactive with **PspA**. The genetic diversity present within this locus, herein called pspC, was also investigated by the examination of 12 sequenced alleles, including the previously sequenced alleles of cbpA and spsA, an allele from the genomic sequencing project, and 7 newly sequenced pspC genes. PspC is a chimeric protein which has acquired domains from both interspecies and intraspecies genetic exchanges, and which can be divided into two clades based on the sequences in the α-helical and proline-rich domains. The identification of two clades of PspC is pertinent to PspC-containing vaccine, immunol. or immunogenic compns, as well as to methods for identifying **PspA**, **pspA**, PspC, pspC, and/or S. pneumoniae. Moreover, the observation that antibodies to the proline-rich regions of **PspA** and PspC can be cross-protective facilitates the design of more efficacious vaccines, e.g., by providing epitopic regions of PspC, epitopes of PspC, and nucleic acid mols. encoding the same. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approx. the same amts., as **PspA**. Thus, the invention provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compns.
RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 39 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 25
AN 2000:64128 BIOSIS
DN PREV200000064128
TI The pspC gene of Streptococcus pneumoniae encodes a polymorphic protein, PspC, which elicits cross-reactive antibodies to **PspA** and provides immunity to **pneumococcal** bacteremia.
AU Brooks-Walter, Alexis [Reprint author]; Briles, David E.; **Hollingshead, Susan K.**
CS Department of Microbiology, University of Alabama at Birmingham, BBRB 658, Birmingham, AL, USA

SO Infection and Immunity, (Dec., 1999) Vol. 67, No. 12, pp. 6533-6542. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
OS Genbank-AF019904; Genbank-AF067128; Genbank-AJ002054; Genbank-AJ002055; Genbank-Y10818
ED Entered STN: 9 Feb 2000
Last Updated on STN: 3 Jan 2002
AB PspC is one of three designations for a **pneumococcal** surface protein whose gene is present in approximately 75% of all Streptococcus pneumoniae strains. Under the name SpsA, the protein has been shown to bind secretory immunoglobulin A (S. Hammerschmidt, S. R. Talay, P. Brandtzaeg, and G. S. Chhatwal, Mol. Microbiol. 25:1113-1124, 1997). Under the name CbpA, the protein has been shown to interact with human epithelial and endothelial cells (C. Rosenow et al., Mol. Microbiol. 25:819-829, 1997). The gene is paralogous to the **pspA** gene in S. pneumoniae and was thus called pspC (A. Brooks-Walter, R. C. Tart, D. E. Briles, and S. K. Hollingshead, Abstracts of the 97th General Meeting of the American Society for Microbiology 1997). Sequence comparisons of five published and seven new alleles reveal that this gene has a mosaic structure, and modular domains have contributed to gene diversity during evolution. Two major clades exist: clade A alleles are larger and contain an extra module that is shared with many **pspA** alleles; clade B alleles are smaller and lack this **pspA**-like domain. All alleles have a proline-rich domain and a choline-binding repeat domain that show 0% divergence from similar domains in the **PspA** protein. Immunization of a rabbit with a recombinant clade B PspC molecule produced antiserum that cross-reacted with both PspC and **PspA** from 15 **pneumococcal** isolates. The cross-reactive antibodies afforded cross-protection in a mouse model system. Mice immunized with PspC were protected against challenge with a strain that expressed **PspA** but not PspC. The **PspA**- and PspC-cross-reactive antibodies were directed to the proline-rich domain present in both molecules.

L8 ANSWER 40 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 26
AN 1999:114541 BIOSIS
DN PREV199900114541
TI Molecular characterization of a globally distributed lineage of serotype 12F Streptococcus pneumoniae causing invasive disease.
AU Robinson, D. Ashley; Turner, J. Scott; Facklam, Richard R.; Parkinson, Alan J.; Breiman, Robert F.; Gratten, Mike; Steinhoff, Mark C.; **Hollingshead, Susan K.**; Briles, David E.; Crain, Marilyn J. [Reprint author]
CS Dep. Pediatrics, Univ. Ala. Birm., 656 Children's Hospital Towers, 1600 7th Ave. S., Birmingham, AL 35233, USA
SO Journal of Infectious Diseases, (Feb., 1999) Vol. 179, No. 2, pp. 414-422. print.
CODEN: JIDIAQ. ISSN: 0022-1899.
DT Article
LA English
ED Entered STN: 12 Mar 1999
Last Updated on STN: 12 Mar 1999
AB These studies have identified a major genetic lineage of capsule serotype 12F Streptococcus pneumoniae, which has maintained two different types of the **pneumococcal** surface protein A (**PspA**) virulence factor and caused invasive disease in geographically disjoint locations. Twenty outbreak strains from a Texas jail and Maryland day care center and 16 reference strains from Texas, Maryland, Washington, Michigan, Oklahoma, Missouri, Alaska, and Australia were examined. Although the Texas and Maryland outbreak strains were indistinguishable by IS1167 and boxA genotyping procedures, all strains examined were members of a genetically similar lineage. The microevolutionary history of **pspA** differed from that of the overall genetic background of the strains. Taken together, these findings suggested that the Texas and Maryland outbreaks were caused by different clones of a major genetic lineage of serotype 12F **pneumococci**, within which at least one **PspA** has been

acquired via localized genetic recombination.

L8 ANSWER 41 OF 46 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:197416 CAPLUS
DN 128:281705
TI Strain selection of **pneumococcal** surface proteins
IN Becker, Robert S.; Briles, David E.; **Hollingshead, Susan**
PA Connaught Laboratories, Inc., USA; Becker, Robert S.; Briles, David E.; Hollingshead, Susan
SO PCT Int. Appl., 58 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 19

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9811915	A1	19980326	WO 1997-US16761	19970922
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5955089	A	19990921	US 1996-710749	19960920
CA 2267343	AA	19980326	CA 1997-2267343	19970922
AU 9744287	A1	19980414	AU 1997-44287	19970922
AU 726927	B2	20001123		
EP 956043	A1	19991117	EP 1997-942626	19970922
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2000503676	T2	20000328	JP 1998-514944	19970922
NZ 334811	A	20000929	NZ 1997-334811	19970922
NO 9901340	A	19990518	NO 1999-1340	19990319
BR 9908649	A	20011030	BR 1999-8649	19990326
US 6638516	B1	20031028	US 1999-147875	19990524
US 2004067237	A1	20040408	US 2003-674755	20030930
PRAI US 1996-710749	A2	19960920		
US 1993-48896	B1	19930420		
US 1995-465746	A2	19950606		
WO 1997-US16761	W	19970922		
US 1999-147875	A1	19990524		

AB The present invention relates to vaccine composition(s) comprising at least two PspAs from strains selected from at least one family, the family being defined by PspAs from strains belonging to the family having greater than or equal to 50 % homol. in aligned sequences of a C-terminal region of an alpha helical region of **PspA**. Addnl., the families are further comprised of clades, wherein PspAs from strains which belong to a clade exhibit at least 75 % sequence homol. in aligned sequences of the C-terminal region of the alpha helix of **PspA**. Vaccine compns. of the present invention preferably comprise a min. of 4 and a maximum of 6 strains representing a single clade each, and the at least two PspAs are optionally serol. or broadly cross-reactive.
RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 42 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 27
AN 1998:478986 BIOSIS
DN PREV199800478986
TI Comparison of the **PspA** sequence from Streptococcus pneumoniae EF5668 to the previously identified **PspA** sequence from strain Rx1 and ability of **PspA** from EF-5668 to elicit protection against **pneumococci** of different capsular types.
AU McDaniel, Larry S. [Reprint author]; McDaniel, D. Olga; **Hollingshead, Susan K.**; Briles, David E.
CS Dep. Microbiol., Univ. Mississippi Medical Cent., 2500 North State St., Jackson, MS 39216, USA

SO Infection and Immunity, (Oct., 1998) Vol. 66, No. 10, pp. 4748-4754. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
OS Genbank-U89711
ED Entered STN: 5 Nov 1998
Last Updated on STN: 5 Nov 1998
AB **PspA** (**pneumococcal** surface protein A) is a serologically varied virulence factor of Streptococcus pneumoniae. In mice, **PspA** has been shown to elicit an antibody response that protects against fatal challenge with encapsulated S. pneumoniae, and the protection-eliciting residues have been mapped to the alpha-helical N-terminal half of the protein. To date, a published DNA sequence for **pspA** is available only for S. pneumoniae Rx1, a laboratory strain. **PspA**/EF5668 (EF5668 indicates the strain of origin of the **PspA**) is serologically distinct from **PspA**/Rx1. Sequencing of the gene encoding **PspA**/EF5668 revealed 71% identity with that of **PspA**/Rx1. The greatest amount of divergence between the two proteins was seen in their alpha-helical portions, which are surface exposed and probably under selective pressure to diversify serologically. In spite of the diversity within the alpha-helical regions of PspAs, we have observed that recombinant **PspA** (rPspA)/EF5668, like rPspA/Rx1, can elicit cross-protection against **pneumococci** of different capsular and **PspA** serological types.

L8 ANSWER 43 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 28
AN 1999:42284 BIOSIS
DN PREV199900042284
TI **Pneumococcal** diversity: Considerations for new vaccine strategies with emphasis on **pneumococcal** surface protein A (**PspA**).
AU Briles, David E. [Reprint author]; Tart, Rebecca Creech; Swiatlo, Edwin; Dillard, Joseph P.; Smith, Patricia; Benton, Kimberly A.; Ralph, Beth A.; Brooks-Walter, Alexis; Crain, Marilyn J.; **Hollingshead, Susan K.**; McDaniel, Larry S.
CS Dep. Microbiology, University Alabama Birmingham, 658 BBRB, Mail Box 10, Birmingham, AL 35294-2170, USA
SO Clinical Microbiology Reviews, (Oct., 1998) Vol. 11, No. 4, pp. 645-657. print.
ISSN: 0893-8512.
DT Article
General Review; (Literature Review)
LA English
ED Entered STN: 10 Feb 1999
Last Updated on STN: 10 Feb 1999

L8 ANSWER 44 OF 46 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:266777 CAPLUS
DN 134:66731
TI Archeological footprints of horizontal gene transfer: mosaic cell surface proteins in S. pyogenes and S. pneumoniae
AU **Hollingshead, Susan K.**; Bessen, Debra E.; Briles, David E.
CS Department of Microbiology, University of Alabama, Birmingham, AL, 35294, USA
SO Horizontal Gene Transfer, [Fallen Leaf Lake Conference on Horizontal Gene Transfer], Fallen Leaf Lake, Calif., Sept. 12-15, 1996 (1998), Meeting Date 1996, 192-207. Editor(s): Syvanen, Michael; Kado, Clarence I. Publisher: Chapman & Hall, London, UK.
CODEN: 68VNA4
DT Conference; General Review
LA English
AB A review with 35 refs. The flux of the host/parasite interaction depends in part on the natural selection that drives changes in cell surface antigens. Serol. change allows escape from host adaptive immune response. In the case of protein antigens, the primary record of serol. change is in the nucleotide sequences encoding the antigens. Thus, nucleotide sequence

variation among gene alleles encoding serotype-specific cell surface proteins reveals the archeol. footprints shaped by evolutionary forces that accumulated serol. change in these mols. over time. The footprints show that a major force in operation was horizontal gene transfer. This concept is illustrated with examples arising from two gene families composed of mosaic genes: the **PspA** protein family in Streptococcus pneumoniae and the M protein family in S. pyogenes. Both **PspA** proteins and M proteins are microbial cell surface antigens that elicit protective immunity in humans and both families consist of serol. varied proteins encoded by mosaic genes. But the differing population structure of these two distinct bacterial species influences the evolution of the gene families and the pattern of mosaicism seen in each case. For S. pneumoniae, individual mosaic alleles of a single **PspA** protein show evidence for multiple recent recombinatorial events which may result from genetic exchange events occurring rather frequently. This is shown by a sliding window anal. of intragenic segments of the **pspA** genes. Frequent horizontal genetic exchange is consistent with recent data supporting a panmictic or epidemic population structure in this species. For S. pyogenes, individual mosaic alleles encoding a single M protein and even emm gene clusters carrying up to three specific emm alleles are often associated with a single clonal strain which may be widely distributed through time and geog. location. In this case, although the mosaic genes themselves and the varied gene clusters were initially formed in part by recombination following horizontal gene transfer, they are not currently in random association with each other or with the chromosomal background of the strains in which they are expressed.

RE.CNT 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 45 OF 46 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:307716 CAPLUS
DN 126:276350
TI **Pneumococcal** genes and portions for use as diagnostic probes and expression products for use as vaccines
IN Briles, David E.; McDaniel, Larry S.; Swiatlo, Edwin; Yother, Janet; Crain, Marilyn J.; **Hollingshead, Susan**; Tart, Rebecca; Brooks-Walter, Alexis
PA Uab Research Foundation, USA
SO PCT Int. Appl., 230 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 19

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9709994	A1	19970320	WO 1996-US14819	19960916
	W: AU, CA, FI, IL, JP, NO				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 6592876	B1	20030715	US 1995-529055	19950915
	AU 9672392	A1	19970401	AU 1996-72392	19960916
	AU 703434	B2	19990325		
	EP 946188	A1	19991006	EP 1996-933794	19960916
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 11513371	T2	19991116	JP 1996-512172	19960916
	FI 9800561	A	19980513	FI 1998-561	19980313
	NO 9801169	A	19980515	NO 1998-1169	19980316
PRAI	US 1995-529055	A	19950915		
	US 1993-48896	B1	19930420		
	US 1995-465746	A2	19950606		
	WO 1996-US14819	W	19960916		

AB The present invention relates to **pneumococcal** genes, portions thereof, expression products therefrom and uses of such genes, portions and products; especially to genes of Streptococcus pneumoniae, e.g., the gene encoding **pneumococcal** surface protein A (**PspA**), i.e., the **PspA** gene, the gene encoding **pneumococcal** surface protein A-like proteins, such as **PspA**-like genes, e.g., the gene encoding **pneumococcal** surface protein C (PspC), i.e., the PspC

gene, portions of such genes, expression products therefrom, and the uses of such genes, portions thereof and expression products therefrom. Streptococcus pneumoniae **PspA** peptides useful as immunogens for eliciting antibodies, and **PspA** gene oligonucleotide fragments useful as diagnostic probes or primers are claimed and discussed.

L8 ANSWER 46 OF 46 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 29
AN 1998:95078 BIOSIS
DN PREV199800095078
TI **PspA** and PspC: Their potential for use as **pneumococcal** vaccines.
AU Briles, David E. [Reprint author]; **Hollingshead, Susan K.**; Swiatlo, Edwin; Brooks-Walter, Alexis; Szalai, Alex; Virolainen, Anni; McDaniel, Larry S.; Benton, Kimberly A.; White, Peter; Prellner, Karin; Hermansson, Anne; Aerts, Piet C.; Van Dijk, Hans; Crain, Marilyn J.
CS Univ. Alabama at Birmingham, 845 19th St. South, Room 658, Birmingham, AL 35294, USA
SO Microbial Drug Resistance, (Winter, 1997) Vol. 3, No. 4, pp. 401-408. print.
ISSN: 1076-6294.
DT Article
LA English
ED Entered STN: 25 Feb 1998
Last Updated on STN: 25 Feb 1998

=> s pneumoco? and pspa and clade?
L9 63 PNEUMOCO? AND PSPA AND CLADE?

=> dup rem l9
PROCESSING COMPLETED FOR L9
L10 28 DUP REM L9 (35 DUPLICATES REMOVED)

=> d bib ab 1-
YOU HAVE REQUESTED DATA FROM 28 ANSWERS - CONTINUE? Y/(N):y

L10 ANSWER 1 OF 28 MEDLINE on STN
AN 2006046071 IN-PROCESS
DN PubMed ID: 16434715
TI **Pneumococcal** surface protein A (**PspA**) family distribution among clinical isolates from adults over 50 years of age collected in seven countries.
AU Hollingshead Susan K; Baril Laurence; Ferro Santiago; King Janice; Coan Pat; Briles David E
CS Department of Microbiology, University of Alabama at Birmingham, BBRB 658, AL 35294, USA. (Pneumococcal Proteins Epi Study Group).
SO Journal of medical microbiology, (2006 Feb) 55 (Pt 2) 215-21.
Journal code: 0224131. ISSN: 0022-2615.
CY England: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS NONMEDLINE; IN-PROCESS; NONINDEXED; Priority Journals
ED Entered STN: 20060126
Last Updated on STN: 20060214
AB The **pneumococcal** surface protein **PspA**, a cell-wall-associated surface protein, is a promising component for **pneumococcal** vaccines. In this study, the distribution of the **PspA** family was determined in a panel of invasive and clinically important **pneumococcal** isolates from adults over 50 years of age, collected between 1995 and 2002. One thousand eight hundred and forty-seven recent isolates from invasive **pneumococcal** disease were obtained from seven Western countries, together with clinical data. An ELISA-based serological method was standardized in order to determine the **PspA** family and **clade** distribution. Molecular tests were used when isolates were non-typable by ELISA (**PspA** family typing by PCR). Only 42 (2.3 %) isolates were non-typable by ELISA and **PspA** family typing by PCR was performed. Finally, 3

isolates were considered as non-**pneumococcal** and 1844 were classified as follows: 749 (40.6 %) were **PspA** family 1, 1078 (58.5 %) were **PspA** family 2, 13 (0.7 %) were **PspA** family 1 and 2 and 4 (0.2 %) remained non-typable. The cross-reactivity of antibodies to PspAs of different **clades** was confirmed. In conclusion, inclusion of **PspA** family 1 and family 2 in future **pneumococcal** vaccines would ensure broad coverage of **pneumococcal** strains infecting people over 50 years of age.

L10 ANSWER 2 OF 28 USPATFULL on STN
AN 2005:312514 USPATFULL
TI Methods to make and use antibodies of improved cross-reactivity
IN Bartol, Barbara A., Gorham, ME, UNITED STATES
Piasio, Roger N., Cumberland, ME, UNITED STATES
PI US 2005272131 A1 20051208
AI US 2005-69079 A1 20050301 (11)
PRAI US 2004-549394P 20040302 (60)
DT Utility
FS APPLICATION
LREP T. D. FOSTER, 12760 HIGH BLUFF DRIVE, SUITE 300, SAN DIEGO, CA, 92130, US
CLMN Number of Claims: 61
ECL Exemplary Claim: 1
DRWN 4 Drawing Page(s)
LN.CNT 1799
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to methods of generating antibodies of improved cross-reactivity against antigens that give rise to immunotypic variations in infectious organisms. The methods include immunizing animals with multiple immunogen preparations that are derived from the antigen of interest. The present invention also includes methods of use of the antibodies of improved cross-reactivity, and assays and kits for employing such methods.

L10 ANSWER 3 OF 28 USPATFULL on STN
AN 2005:226556 USPATFULL
TI **PNEUMOCOCCAL** SURFACE PROTEIN C (PSPC), EPITOPIC REGIONS AND STRAIN SELECTION THEREOF, AND USES THEREFOR
IN Briles, David E., Birmingham, AL, UNITED STATES
Hollingshead, Susan K., Birmingham, AL, UNITED STATES
Brooks-Walter, Alexis, Birmingham, AL, UNITED STATES
PI US 2005196405 A1 20050908
AI US 2003-341201 A1 20030113 (10)
RLI Continuation of Ser. No. US 2000-748875, filed on 26 Dec 2000, ABANDONED
Division of Ser. No. US 1999-298523, filed on 23 Apr 1999, PENDING
PRAI US 1998-82728P 19980423 (60)
DT Utility
FS APPLICATION
LREP Michael L. Goldman, Esq., NIXON PEABODY LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051, US
CLMN Number of Claims: 10
ECL Exemplary Claim: 1-27
DRWN 50 Drawing Page(s)
LN.CNT 4782
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed and claimed are: epitopic regions of **Pneumococcal** Surface Protein C or "PspC", different **clades** of PspC, isolated and/or purified nucleic acid molecules such as DNA encoding a fragment or portion of PspC such as an epitopic region of PspC or at least one epitope of PspC, uses for such nucleic acid molecules, e.g., to detect the presence of PspC or of S. pneumoniae by detecting a nucleic acid molecule therefor in a sample such as by amplification and/or a polymerase chain reaction, vectors or plasmids which contain and/or express such nucleic acid molecles, e.g., in vitro or in vivo, immunological, immunogenic or vaccine compositions including at least one PspC and/or a portion thereof (such as at least one epitopic region of at least one PspC and/or at least one polypeptide encoding at least one epitope of at least one PspC), either alone or in further combination with at least one second **pneumococcal** antigen,

such as at least one different PspC and/or a fragment thereof and/or at least one **PspA** and/or at least one epitopic region of at least one **PspA** and/or at least one polypeptide including at least one epitope of **PspA**. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approximately the same amounts, as **PspA** . Thus, the invention further provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compositions.

L10 ANSWER 4 OF 28 USPATFULL on STN
AN 2004:101977 USPATFULL
TI **Pneumococcal** genes, portions thereof, expression products therefrom, and uses of such genes, portions and products
IN Briles, David E., Birmingham, AL, UNITED STATES
McDaniel, Larry S., Ridgland, MS, UNITED STATES
Swiatlo, Edwin, Birmington, AL, UNITED STATES
Yother, Janet, Birmingham, AL, UNITED STATES
Crain, Marilyn J., Birmingham, AL, UNITED STATES
Hollingshead, Susan, Birmingham, AL, UNITED STATES
Tart, Rebecca, Benson, NC, UNITED STATES
Brooks-Walter, Alexis, Birmingham, AL, UNITED STATES
PI US 2004077847 A1 20040422
AI US 2002-299636 A1 20021119 (10)
RLI Division of Ser. No. US 1996-714741, filed on 16 Sep 1996, GRANTED, Pat. No. US 6500613 Continuation-in-part of Ser. No. US 1995-529055, filed on 15 Sep 1995, GRANTED, Pat. No. US 6592876 Continuation-in-part of Ser. No. US 1994-226844, filed on 13 Apr 1994, GRANTED, Pat. No. US 5586225 Continuation-in-part of Ser. No. US 1993-93907, filed on 20 Jul 1993, ABANDONED Continuation-in-part of Ser. No. US 1992-884918, filed on 18 May 1992, ABANDONED Continuation-in-part of Ser. No. US 1995-482981, filed on 7 Jun 1995, GRANTED, Pat. No. US 6232116 Continuation-in-part of Ser. No. US 1995-458399, filed on 2 Jun 1995, GRANTED, Pat. No. US 6231870 Continuation-in-part of Ser. No. US 1995-446201, filed on 19 May 1995, GRANTED, Pat. No. US 6042838 Continuation-in-part of Ser. No. US 1994-246636, filed on 20 May 1994, GRANTED, Pat. No. US 5965141 Continuation-in-part of Ser. No. US 1994-319795, filed on 7 Oct 1994, GRANTED, Pat. No. US 5980909 Continuation-in-part of Ser. No. US 1993-72070, filed on 3 Jun 1993, GRANTED, Pat. No. US 5476929 Continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, ABANDONED
PRAI JP 1993-88369 19930415
JP 1993-287079 19931116
DT Utility
FS APPLICATION
LREP Michael L. Goldman, NIXON PEABODY LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051
CLMN Number of Claims: 3
ECL Exemplary Claim: 1
DRWN 69 Drawing Page(s)
LN.CNT 6753
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to **pneumococcal** genes, portions thereof, expression products therefrom and uses of such genes, portions and products; especially to genes of Streptococcus pneumoniae, e.g., the gene encoding **pneumococcal** surface protein A (**PspA**), i.e., the **pspA** gene, the gene encoding **pneumococcal** surface protein A-like proteins, such as **pspA**-like genes, e.g., the gene encoding **pneumococcal** surface protein C (PspC), i.e., the pspC gene, portions of such genes, expression products therefrom, and the uses of such genes, portions thereof and expression products therefrom.

L10 ANSWER 5 OF 28 USPATFULL on STN
AN 2004:88268 USPATFULL
TI Strain selection of **pneumococcal** surface proteins
IN Becker, Robert S., Henryville, PA, UNITED STATES
Briles, David E., Birmingham, AL, UNITED STATES
Hollingshead, Susan, Birmingham, AL, UNITED STATES

PI US 2004067237 A1 20040408
AI US 2003-674755 A1 20030930 (10)
RLI Continuation of Ser. No. US 1999-147875, filed on 24 May 1999, GRANTED, Pat. No. US 6638516 A 371 of International Ser. No. WO 1997-US16761, filed on 22 Sep 1997, PENDING Continuation-in-part of Ser. No. US 1996-710749, filed on 20 Sep 1996, GRANTED, Pat. No. US 5955089
DT Utility
FS APPLICATION
LREP Nixon Peabody LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051
CLMN Number of Claims: 34
ECL Exemplary Claim: 1
DRWN 10 Drawing Page(s)
LN.CNT 1826
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to vaccine composition(s) comprising at least two PspAs from strains selected from at least one family, the family being defined by PspAs from strains belonging to the family having greater than or equal to 50% homology in aligned sequences of a C-terminal region of an alpha helical region of **PspA**. Additionally, the families are further comprised of **clades**, wherein PspAs from strains which belong to a **clade** exhibit at least 75% sequence homology in aligned sequences of the C-terminal region of the alpha helix of **PspA**. Vaccine compositions of the present invention preferably comprise a minimum of 4 and a maximum of 6 strains representing a single **clade** each, and the at least two PspAs are optionally serologically or broadly cross-reactive.

L10 ANSWER 6 OF 28 USPATFULL on STN
AN 2004:82311 USPATFULL
TI Human complement C3-binding protein from streptococcus pneumoniae
IN Hostetter, Margaret K., New Haven, CT, UNITED STATES
Dunny, Gary M., St. Paul, MN, UNITED STATES
Nandiwada, Lakshnmi S., Eagan, MN, UNITED STATES
PA Regents of the University of Minnesota, Minneapolis, MN, UNITED STATES, 55455-2070 (U.S. corporation)
PI US 2004062760 A1 20040401
AI US 2003-682595 A1 20031009 (10)
RLI Division of Ser. No. US 1999-403422, filed on 19 Oct 1999, GRANTED, Pat. No. US 6676943 A 371 of International Ser. No. WO 1998-US8281, filed on 24 Apr 1998, PENDING
PRAI US 1997-44316P 19970424 (60)
DT Utility
FS APPLICATION
LREP MUETING, RAASCH & GEBHARDT, P.A., P.O. BOX 581415, MINNEAPOLIS, MN, 55458
CLMN Number of Claims: 74
ECL Exemplary Claim: 1
DRWN 2 Drawing Page(s)
LN.CNT 1601
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to the identification and use of a family of human complement C3-degrading proteinases expressed by S. pneumoniae. The proteinase has a molecular weight of about 24 kD to about 34 kD as determined on a 10% SDS polyacrylamide gel. A preferred proteinase of this invention includes the amino acid sequence of SEQ ID NO: 2.

L10 ANSWER 7 OF 28 USPATFULL on STN
AN 2004:9473 USPATFULL
TI Human complement C3-degrading protein from Streptococcus pneumoniae
IN Hostetter, Margaret K., New Haven, CT, United States
Dunny, Gary, St. Paul, MN, United States
Nandiwada, Lakshmi S., Mendota Heights, MN, United States
PA Regents of the University of Minnesota, Minneapolis, MN, United States (U.S. corporation)
PI US 6676943 B1 20040113
WO 9848022 19981029
AI US 1999-403422 19991019 (9)
WO 1998-US8281 19980424

PRAI US 1997-44316P 19970424 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Smith, Lynette R. F.; Assistant Examiner: Zeman, Robert A.
LREP Mueting Raasch & Gebhardt
CLMN Number of Claims: 50
ECL Exemplary Claim: 1
DRWN 4 Drawing Figure(s); 2 Drawing Page(s)
LN.CNT 1816
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to the identification and use of a family of human complement C3-degrading proteinases expressed by S. pneumoniae. The proteinase has a molecular weight of about 24 kD to about 34 kD as determined on a 10% SDS polyacrylamide gel. A preferred proteinase of this invention includes the amino acid sequence of SEQ ID NO:2.

L10 ANSWER 8 OF 28 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 1
AN 2003:549966 BIOSIS
DN PREV200300550214
TI Strain selection of **pneumococcal** surface proteins.
AU Becker, Robert S. [Inventor, Reprint Author]; Briles, David E. [Inventor]; Hollingshead, Susan [Inventor]
CS ASSIGNEE: The UAB Research Foundation
PI US 6638516 20031028
SO Official Gazette of the United States Patent and Trademark Office Patents, (Oct 28 2003) Vol. 1275, No. 4. http://www.uspto.gov/web/menu/patdata.html . e-file.
ISSN: 0098-1133 (ISSN print).
DT Patent
LA English
ED Entered STN: 19 Nov 2003
Last Updated on STN: 19 Nov 2003
AB The present invention relates to vaccine composition(s) comprising at least two PspAs from strains selected from at least one family, the family being defined by PspAs from strains belonging to the family having greater than or equal to 50% homology in aligned sequences of a C-terminal region of an alpha helical region of **PspA**. Additionally, the families are further comprised of **clades**, wherein PspAs from strains which belong to a **clade** exhibit at least 75% sequence homology in aligned sequences of the C-terminal region of the alpha helix of **PspA**. Vaccine compositions of the present invention preferably comprise a minimum of 4 and a maximum of 6 strains representing a single **clade** each, and the at least two PspAs are optionally serologically or broadly cross-reactive.

L10 ANSWER 9 OF 28 USPATFULL on STN
AN 2003:85835 USPATFULL
TI **PNEUMOCOCCAL** SURFACE PROTEIN C (PSPC), EPITOPIC REGIONS AND STRAIN SELECTION THEREOF, AND USES THEREFOR
IN BRILES, DAVID E., BIRMINGHAM, AL, UNITED STATES
HOLLINGSHEAD, SUSAN K., BIRMINGHAM, AL, UNITED STATES
BROOKS-WALTER, ALEXIS, BIRMINGHAM, AL, UNITED STATES
PA NIXON PEABODY LLP (U.S. corporation)
PI US 2003059438 A1 20030327
AI US 1999-298523 A1 19990423 (9)
PRAI US 1998-82728P 19980423 (60)
DT Utility
FS APPLICATION
LREP Michael L Goldman, NIXON PEABODY LLP, Clinton Square, P O Box 31051, Rochester, NY, 14603
CLMN Number of Claims: 27
ECL Exemplary Claim: 1
DRWN 50 Drawing Page(s)
LN.CNT 1957
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed and claimed are: epitopic regions of **Pneumococcal** Surface Protein C or "PspC", different **clades** of PspC,

isolated and/or purified nucleic acid molecules such as DNA encoding a fragment or portion of PspC such as an epitopic region of PspC or at least one epitope of PspC, uses for such nucleic acid molecules, e.g., to detect the presence of PspC or of S. pneumoniae by detecting a nucleic acid molecule therefor in a sample such as by amplification and/or a polymerase chain reaction, vectors or plasmids which contain and/or express such nucleic acid molecles, e.g., in vitro or in vivo, immunological, immunogenic or vaccine compositions including at least one PspC and/or a portion thereof (such as at least one epitopic region of at least one PspC and/or at least one polypeptide encoding at least one epitope of at least one PspC), either alone or in further combination with at least one second **pneumococcal** antigen, such as at least one different PspC and/or a fragment thereof and/or at least one **PspA** and/or at least one epitopic region of at least one **PspA** and/or at least one polypeptide including at least one epitope of **PspA**. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approximately the same amounts, as **PspA** . Thus, the invention further provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compositions.

L10 ANSWER 10 OF 28 USPATFULL on STN
AN 2003:50850 USPATFULL
TI Novel meningitis conjugate vaccine
IN D'Ambra, Anello J., Mount Pocono, PA, UNITED STATES
Arnold, Frank J., Newfoundland, PA, UNITED STATES
Maleckar, James R., Nazareth, PA, UNITED STATES
McMaster, Ronald P., Stroudsburg, PA, UNITED STATES
PI US 2003035806 A1 20030220
AI US 2002-142525 A1 20020509 (10)
PRAI US 2001-290200P 20010511 (60)
DT Utility
FS APPLICATION
LREP Aventis Pasteur, Inc., Route 611, Discovery Drive, Swiftwater, PA, 18370
CLMN Number of Claims: 45
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 942
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to immunogenic protein-polysaccharide conjugates comprising **pneumococcal** surface protein (**PspA**) obtained from Streptococcus pneumoniae conjugated to a capsular polysaccharide from N. meningitidis, and compositions comprising the same. Also provided are methods of manufacture of such immunogenic combinations as well as methods of use of such immunogenic combinations in the prevention and treatment of bacterial meningitis, particularly **pneumococcal** and meningococcal meningitis.

L10 ANSWER 11 OF 28 USPATFULL on STN
AN 2003:29853 USPATFULL
TI Use of coiled-coil structural scaffold to generate structure-specific peptides
IN Houston, Michael E., Edmonton, CANADA
Hodges, Robert, Denver, CO, UNITED STATES
PI US 2003021795 A1 20030130
AI US 2001-882774 A1 20010614 (9)
PRAI US 2000-211892P 20000614 (60)
US 2000-213387P 20000623 (60)
DT Utility
FS APPLICATION
LREP BURNS DOANE SWECKER & MATHIS L L P, POST OFFICE BOX 1404, ALEXANDRIA, VA, 22313-1404
CLMN Number of Claims: 57
ECL Exemplary Claim: 1
DRWN 8 Drawing Page(s)
LN.CNT 1934
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention relates to the use of a coiled-coil structural scaffold

to generate structure-specific peptides, including synthetic peptides derived from naturally occurring proteins of various origin. The structure of the synthetic peptides utilizes a scaffold of heptad repeat units into which epitopes from coiled-coil regions of native proteins are spliced. In particular, the synthetic peptides may be based on microbial proteins, especially surface proteins, which occur naturally in the coiled-coil form such as **pneumococcal** surface proteins A and C. The synthetic peptides are immunogenic and can be used to elicit an immune response in an animal. Accordingly, they are useful as vaccines or to stimulate antibody production or cell-mediated immunity to the naturally occurring protein.

L10 ANSWER 12 OF 28 MEDLINE on STN DUPLICATE 2
AN 2003314523 MEDLINE
DN PubMed ID: 12843012
TI Phenotypic and genotypic characterization of two penicillin-susceptible serotype 6B Streptococcus pneumoniae clones circulating in Italy.
AU Gherardi Giovanni; Del Grosso Maria; Scotto D'Abusco Anna; D'Ambrosio Fabio; Dicuonzo Giordano; Pantosti Annalisa
CS Dipartimento di Medicina di Laboratorio e Microbiologia, Universita Campus Biomedico, Rome, Italy.
SO Journal of clinical microbiology, (2003 Jul) 41 (7) 2855-61.
Journal code: 7505564. ISSN: 0095-1137.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200310
ED Entered STN: 20030708
Last Updated on STN: 20031003
Entered Medline: 20031002
AB Twenty-nine penicillin-susceptible serotype 6B strains isolated from patients with invasive diseases and from healthy carriers were examined by different genotyping methods. Ten groups were identified on the basis of the pulsed-field gel electrophoresis (PFGE) profiles, and two of these contained multiple isolates and were analyzed further. PFGE group 1 comprised 12 isolates, the majority of which had a multiresistant phenotype (resistance to erythromycin, clindamycin, tetracycline, chloramphenicol, and trimethoprim-sulfamethoxazole), corresponding to that of a clone previously described in the Mediterranean area and related to penicillin-resistant clone Spain(6B)-2. The pbp2b, pbp2x, dhf, and **pspA** genes of the isolates had identical restriction profiles; and the partial sequence of **pspA** was identical to that of clone Spain(6B)-2. In all isolates the resistance determinants erm(B) and tet(M) were inserted in a Tn1545-like element; 11 isolates carried cat as part of the integrated plasmid pC194. Multilocus sequence typing (MLST) performed with two isolates confirmed that their profiles corresponded to that of the Mediterranean clone. PFGE group 2 comprised nine strains, of which the majority showed no antibiotic resistance. Their **pspA** profiles were different, and the partial sequences obtained for two representative isolates indicated the presence of **PspA** proteins of different **clades**. The MLST profile of one strain was identical to that of a serotype 6B strain from the United Kingdom, while two other isolates were novel one-allele variants. This clone appears to be related (five of seven identical alleles) to two other internationally disseminated clones, Hungary(19A)-6 and Poland(23F)-16, both of which are penicillin resistant. The presence of antibiotic-susceptible isolates of this clone suggests that traits other than antibiotic resistance can make a clone successful.

L10 ANSWER 13 OF 28 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 3
AN 2003:172165 BIOSIS
DN PREV200300172165
TI Regions of **PspA**/EF3296 best able to elicit protection against Streptococcus pneumoniae in a murine infection model.
AU Roche, Hazeline; Hakansson, Anders; Hollingshead, Susan K.; Briles, David E. [Reprint Author]
CS Department of Microbiology, University of Alabama at Birmingham, 845 19th

St. South, BBRB-662 Box 10, Birmingham, AL, 35294, USA
dbriles@uab.edu
SO Infection and Immunity, (March 2003) Vol. 71, No. 3, pp. 1033-1041. print.
ISSN: 0019-9567 (ISSN print).
DT Article
LA English
ED Entered STN: 2 Apr 2003
Last Updated on STN: 2 Apr 2003
AB **Pneumococcal** surface protein A (**PspA**) can elicit protection against Streptococcus pneumoniae in mouse infection models. **PspA** is classified by serology and amino acid sequence into two major families that are divided by sequence into five **clades**. The most variable portion of the molecule is the alpha-helical domain, which comprises the N-terminal half of **PspA**. Prior studies of a family 1 **PspA** protein observed that protective antibodies are reactive with epitopes in the alpha-helical domain and that most cross-protective epitopes mapped to the 108 most C-terminal amino acids of the alpha-helical region. In these studies, we have used six overlapping recombinant fragments of family 2, **clade** 3 **PspA**/EF3296 to map the protection-eliciting regions of its alpha-helical domain. The three fragments, which included the 104 most C-terminal amino acids of the alpha-helical domain (314 to 418), could each elicit protection against EF3296. A fragment comprising amino acids 75 to 305 failed to elicit significant protection. A fragment containing amino acids 1 to 115 elicited protection against EF3296 in BALB/c mice but not in CBA/N mice. All three fragments containing amino acids 314 to 418 were able to elicit cross-protection against **pneumococci** expressing **PspA** proteins of **clades** 2, 3, 4, and 5. Cross-protection elicited by these three fragments was easier to demonstrate in CBA/N mice than in BALB/c mice. The 1-to-115 fragment, however, elicited some cross-protection against **clades** 2 and 4 in BALB/c mice but not in CBA/N mice. These studies provide support for the importance of the C-terminal 104 and N-terminal 115 amino acids of the alpha-helical region of **PspA** in the elicitation of cross-protection.

L10 ANSWER 14 OF 28 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2004:40982 BIOSIS
DN PREV200400041561
TI Diversity of **pneumococcal** surface protein A (**PspA**) families of Streptococcus pneumoniae among Japanese children.
AU Suzumoto, M. [Reprint Author]; Hotomi, M. [Reprint Author]; Billal, D. S. [Reprint Author]; Brile, D. E.; Hollingshead, S. K.; Yasui, N. [Reprint Author]; Yamanaka, N. [Reprint Author]
CS Wakayama Medical University, Wakayama, Japan
SO Abstracts of the Interscience Conference on Antimicrobial Agents and Chemotherapy, (2003) Vol. 43, pp. 276. print.
Meeting Info.: 43rd Annual Interscience Conference on Antimicrobial Agents and Chemotherapy. Chicago, IL, USA. September 14-17, 2003. American Society for Microbiology.
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 14 Jan 2004
Last Updated on STN: 14 Jan 2004
AB Background: Streptococcus pneumoniae (S. pneumoniae) is one of the leading causative pathogens for pneumonia, meningitis and upper respiratory tract (URT) infectious disease including acute otitis media (AOM). Urgent demand to develop the effective vaccine has been further emphasized by recent studies demonstrating a rapid increase in prevalence and level of resistance of multiple antibiotics resistant pnuemococci. **Pneumococcal** capsular polysaccharides have been investigated for vaccine candidate, but cannot evoke immune responses among young children. **Pneumococcal** surface protein A (**PspA**) is attractive protein for vaccine candidate. **PspA** were divided into 3 families including 7 **clades**. Even though **PspA** can be divided into serological distinguishable group, it is a very cross-reactive protein. Methods: 94 **pneumococcal** isolates from 16 otitis prone children were evaluated into this study. Evaluation of

diversity of **PspA** family was assessed by polymerase chain reaction (PCR). Results: **PspA** family 2 was the prevalent family of **PspA** in **pneumococcal** isolated from otitis prone children in Japan. Some strains possessed **PspA** classified into family 1. **PspA** family 3 were identified only in 2 strains among the children. Conclusions: Although major efforts are being directed at the development of polysaccharide-protein conjugate vaccine, the immunogenic nature of **pneumococcal** protein makes them prime targets for new vaccine strategy. While the several **pneumococcal** proteins are capable of inducing immune responses, **PspA** is unique in eliciting protective immunity. The present study in the prevalence of **PspA** family suggested that **PspA** family 1 and 2 would be an attractive candidate for developing **pneumococcal** vaccine.

L10 ANSWER 15 OF 28 USPATFULL on STN
AN 2002:346772 USPATFULL
TI **Pneumococcal** surface proteins and uses thereof
IN Briles, David E., Birmingham, AL, United States
McDaniel, Larry S., Ridgland, MS, United States
Swiatlo, Edwin, Birmingham, AL, United States
Yother, Janet, Birmingham, AL, United States
Crain, Marilyn J., Birmingham, AL, United States
Hollingshead, Susan, Birmingham, AL, United States
Tart, Rebecca, Benson, NC, United States
Brooks-Walter, Alexis, Birmingham, AL, United States
PA University of Alabama at Birmingham, Birmingham, AL, United States (U.S. corporation)
PI US 6500613 B1 20021231
AI US 1996-714741 19960916 (8)
RLI Continuation-in-part of Ser. No. US 1995-529055, filed on 15 Sep 1995
DT Utility
FS GRANTED
EXNAM Primary Examiner: Housel, James C.; Assistant Examiner: Swartz, Rodney P.
LREP Frommer Lawrence & Haug LLP, Frommer, William S., Kowalski, Thomas J.
CLMN Number of Claims: 9
ECL Exemplary Claim: 1
DRWN 71 Drawing Figure(s); 69 Drawing Page(s)
LN.CNT 7865
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to **pneumococcal** genes, portions thereof, expression products therefrom and uses of such genes, portions and products; especially to genes of Streptococcus pneumoniae, e.g., the gene encoding **pneumococcal** surface protein A (**PspA**), i.e., the **pspA** gene, the gene encoding **pneumococcal** surface protein A-like proteins, such as **pspA**-like genes, e.g., the gene encoding **pneumococcal** surface protein C (PspC), i.e., the pspC gene, portions of such genes, expression products therefrom, and the uses of such genes, portions thereof and expression products therefrom.

L10 ANSWER 16 OF 28 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 4
AN 2002:495661 BIOSIS
DN PREV200200495661
TI Analysis of serum cross-reactivity and cross-protection elicited by immunization with DNA vaccines against Streptococcus pneumoniae expressing **PspA** fragments from different **clades**.
AU Miyaji, Eliane N. [Reprint author]; Ferreira, Daniela M.; Lopes, Alexandre P. Y.; Brandileone, M. Cristina C.; Dias, Waldely O.; Leite, Luciana C. C.
CS Centro de Biotecnologia, Instituto Butantan, Av. Vital Brasil, 1500, 05503-900, Sao Paulo, SP, Brazil
enmiyaji@uol.com.br
SO Infection and Immunity, (September, 2002) Vol. 70, No. 9, pp. 5086-5090. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English

ED Entered STN: 18 Sep 2002
Last Updated on STN: 18 Sep 2002
AB Streptococcus pneumoniae is a major cause of disease, especially in developing countries, and cost-effective alternatives to the currently licensed vaccines are needed. We constructed DNA vaccines based on **pneumococcal** surface protein A (**PspA**), an antigen shown to induce protection against **pneumococcal** bacteremia. **PspA** fragments can be divided into three families, which can be subdivided into six **clades**, on the basis of **PspA** amino acid sequence divergence (S. K. Hollingshead, R. Becker, and D. E. Briles, Infect. Immun. 68:5889-5900, 2000). Since most clinical isolates belong to family 1 or family 2, **PspA** fragments from members of both of these families were analyzed. Vectors encoding the complete N-terminal regions of PspAs elicited significant humoral responses, and cross-reactivity was mainly restricted to the same family. DNA vaccines encoding fusions between **PspA** fragments from family 1 and family 2 were also constructed and were able to broaden the cross-reactivity, with induction of antibodies that showed reactions with members of both families. At least for the **pneumococcal** strains tested, the cross-reactivity of antibodies was not reflected in cross-protection. Animals immunized with DNA vaccines expressing the complete N-terminal regions of **PspA** fragments were protected only against intraperitoneal challenge with a strain expressing **PspA** from the same **clade**.

L10 ANSWER 17 OF 28 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2003:347752 BIOSIS
DN PREV200300347752
TI **Pneumococcal** surface protein A (**PspA**) distribution among invasive **pneumococcal** isolates from adults over 50 years of age.
AU Hollingshead, S. [Reprint Author]; Baril, L.; Ferro, S.; Punar, M. [Reprint Author]; King, J. [Reprint Author]; Briles, D. [Reprint Author]
CS Univ. of Alabama, Birmingham, AL, USA
SO Abstracts of the Interscience Conference on Antimicrobial Agents and Chemotherapy, (2002) Vol. 42, pp. 247. print.
Meeting Info.: 42nd Interscience Conference on Antimicrobial Agents and Chemotherapy. San Diego, CA, USA. September 27-30, 2002. American Society for Microbiology.
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 30 Jul 2003
Last Updated on STN: 30 Jul 2003
AB Background: **PspA** represents a promising vaccine candidate. The **PspA** gene sequences revealed two major families termed Family 1 (**Clades** 1 and 2), Family 2 (**Clades** 3, 4 and 5) and one less common family: Family 3 (**Clade** 6). Within families, **PspA** stimulates broadly cross-reactive antibodies. Methods: To describe the distribution of **PspA** Family/**clade** from clinical isolates (n=2,500) collected in 7 countries (Australia, Canada, France, Spain, Sweden, UK, USA). Criteria for inclusion: 1) invasive isolates from patients aged over 50, 2) Isolated after January 1, 1995, and 3) data available on demographic/clinical, capsular serotype and antibiotic susceptibility. Evaluation of the proportion of isolates reactive to an anti-sera produced from rabbit immunized with the 3 proposed vaccine antigens (Family1/**clade2**; Family2/**clade3**; Family2/**clade4**) was done using an ELISA assay. **PspA clade** PCR, capsular serotyping, penicillin testing were conducted on 10% of randomly selected isolates. Results: The distribution among the first 1,012 eligible isolates according to **PspA** Family typing is as follows: Family 1: 423 (41.8%), Family 2: 580 (57.3%), Non-typable: 9 (0.9%). The correlation between the results of the ELISA assay and PCR is 100%. So far, there is no association between-**PspA** family/**clade** distribution and capsular serotypes or decreased susceptibility to penicillin. No significant geographical differences in **PspA** family/**clade** distribution have been detected. Conclusions: The distribution of

invasive **pneumococcal** isolates shows that more than 99% belong to **PspA** Family 1 or Family 2. Inclusion of both **PspA** Family 1 and Family 2 proteins in a vaccine formulation will likely provide extensive coverage against invasive **pneumococcal** isolates.

L10 ANSWER 18 OF 28 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2002:585391 BIOSIS
DN PREV200200585391
TI Protection against Streptococcus pneumoniae by genetic immunization with **pspA**/EF5668.
AU Moore, Q. C. [Reprint author]; Bosarge, J. R. [Reprint author]; Ethridge, A. S. [Reprint author]; McDaniel, L. S. [Reprint author]
CS University of Mississippi Medical Center, Jackson, MS, USA
SO Abstracts of the General Meeting of the American Society for Microbiology, (2002) Vol. 102, pp. 162. print.
Meeting Info.: 102nd General Meeting of the American Society for Microbiology. Salt Lake City, UT, USA. May 19-23, 2002. American Society for Microbiology.
ISSN: 1060-2011.
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 13 Nov 2002
Last Updated on STN: 13 Nov 2002
AB Streptococcus pneumoniae (**pneumococcus**) is an important human pathogen associated with significant morbidity and mortality. There are several known **pneumococcal** virulence factors including **pneumococcal** surface protein A (**PspA**). Genetic immunization with **pspA**/RX1 has been shown to elicit protection against **pneumococcal** infection in a mouse model. We evaluated the use of **pspA**/EF5668 in genetic immunization. This **PspA** variant represents a **PspA clade** distinct from that of the **PspA**/RX1. The DNA fragment encoding the alpha-helical domain of **PspA**/EF5668 was cloned into a eukaryotic expression vector and designated pJB100EF. **PspA** specific serum antibody was detected by ELISA in mice immunized with pJB100EF. The immune serum was cross-reactive in a Western blot with **PspA** from several different **pneumococcal** isolates representing different **PspA clades**. Reactivity of pJB100EF immune serum with various truncated fragments of recombinant **PspA** in a Western blot analysis localized the region of cross reactivity to AA 110-288 of **PspA**/RX1. Survival of immunized mice following **pneumococcal** challenge demonstrated the ability of pJB100EF to provide protective immunity. These data confirm the ability of the region of **pspA** encoding the alpha-helical domain to elicit protection following genetic immunization. Also, as previously demonstrated by immunization with various recombinant **PspA** peptides, genetic immunization with **pspA** elicits cross-reactive antibodies.

L10 ANSWER 19 OF 28 USPATFULL on STN
AN 2001:139158 USPATFULL
TI **Pneumococcal** surface protein C (PspC), epitopic regions and strain selection thereof, and uses therefor
IN Briles, David E., Birmingham, AL, United States
Hollingshead, Susan K., Birmingham, AL, United States
Brooks-Walter, Alexis, Birmingham, AL, United States
PI US 2001016200 A1 20010823
AI US 2000-748875 A1 20001226 (9)
RLI Division of Ser. No. US 1999-298523, filed on 23 Apr 1999, PENDING
PRAI US 1998-82728P 19980423 (60)
DT Utility
FS APPLICATION
LREP FROMMER LAWRENCE & HAUG, 745 FIFTH AVENUE, NEW YORK, NY, 10151
CLMN Number of Claims: 27
ECL Exemplary Claim: 1
DRWN 50 Drawing Page(s)
LN.CNT 1911

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed and claimed are: epitopic regions of **Pneumococcal** Surface Protein C or "PspC", different **clades** of PspC, isolated and/or purified nucleic acid molecules such as DNA encoding a fragment or portion of PspC such as an epitopic region of PspC or at least one epitope of PspC, uses for such nucleic acid molecules, e.g., to detect the presence of PspC or of S. pneumoniae by detecting a nucleic acid molecule therefor in a sample such as by amplification and/or a polymerase chain reaction, vectors or plasmids which contain and/or express such nucleic acid molecles, e.g., in vitro or in vivo, immunological, immunogenic or vaccine compositions including at least one PspC and/or a portion thereof (such as at least one epitopic region of at least one PspC and/or at least one polypeptide encoding at least one epitope of at least one PspC), either alone or in further combination with at least one second **pneumococcal** antigen, such as at least one different PspC and/or a fragment thereof and/or at least one **PspA** and/or at least one epitopic region of at least one **PspA** and/or at least one polypeptide including at least one epitope of **PspA**. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approximately the same amounts, as **PspA** . Thus, the invention further provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compositions.

L10 ANSWER 20 OF 28 USPATFULL on STN
AN 2001:158472 USPATFULL
TI Method for isolating a C3 binding protein of streptococcus pneumoniae
IN Hostetter, Margaret K., New Haven, CT, United States
Cheng, Qi, Plymouth, MN, United States
PA Regents of the University of Minnesota, Minneapolis, MN, United States (U.S. corporation)
PI US 6291654 B1 20010918
WO 9821337 19980522
AI US 1999-308022 19990512 (9)
WO 1997-US20586 19971112
19990512 PCT 371 date
19990512 PCT 102(e) date
PRAI US 1996-29444P 19961112 (60)
US 1997-38086P 19970218 (60)
US 1997-59368P 19970919 (60)
US 1997-62473P 19971016 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Wortman, Donna C.; Assistant Examiner: Zeman, Robert A.
LREP Mueting, Raasch & Gebhardt, P.A.
CLMN Number of Claims: 5
ECL Exemplary Claim: 1
DRWN 9 Drawing Figure(s); 7 Drawing Page(s)
LN.CNT 1263
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention relates to the identification of a human complement C3 binding protein from Streptococcus pneumoniae and to its sequence and to methods for its purification and use. The protein binds but does not degrade or cleave C3 and is implicated in S. pneumoniae virulence. The protein is recognized by antibodies produced by humans recovering from **pneumococcal** infection.

L10 ANSWER 21 OF 28 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2002:565890 BIOSIS
DN PREV200200565890
TI Natural history of antibodies to **PspA** and PsaA in adults over 50 years of age with an invasive **pneumococcal** disease.
AU Baril, L. [Reprint author]; Crozier, P. [Reprint author]; King, J.; Hollingshead, S. K.; Briles, D. E.; McCormick, J. [Reprint author]
CS Aventis-Pasteur, Lyon, France
SO Abstracts of the Interscience Conference on Antimicrobial Agents and

Chemotherapy, (2001) Vol. 41, pp. 257. print.
Meeting Info.: 41st Annual Meeting of the Interscience Conference on Antimicrobial Agents and Chemotherapy. Chicago, Illinois, USA. September 22-25, 2001.
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 7 Nov 2002
Last Updated on STN: 7 Nov 2002
AB Background: **PspA** and PsaA are surface proteins from Streptococcus pneumoniae which are potential **pneumococcal** vaccine antigens. Methods: Case-control study from patients admitted at the Hospital in Saint Etienne (France) between 12/1999 and 05/2000. Case definition: a patient with a clinical diagnosis of **pneumococcal** disease confirmed by >=1 positive culture to S. pneumoniae from a normally sterile body fluid. Two healthy control subjects were matched by aged to each case. Concentrations of antibody (Ig) were determined by ELISA for antibodies reactive to recombinant (r) Rx1-**PspA** (Family 1, **Clade2**, provided by Aventis-Pasteur) and rPsaA (provided by E. Ades, CDC). S. pneumoniae isolates were typed for **PspA** family and **clade** by PCR and DNA sequence analysis. Results: 14 cases and 35 controls were included. Anti-rRx1 **PspA** GMC (95%CI) were 2.76mug/mL (1.32-5.79) and 27.26 (15.54-27.26) in acute and convalescent case sera, respectively ($p<0.001$, t paired-test) and 3.88 (2.71-5.56) from control sera. Anti-rPsaA GMC were 3.55 mug/mL (0.86-14.75) and 90.23 (47.83-170.19) respectively ($p<0.001$, t paired-test) and 5.16 (3.48-7.66) from control sera. Isolates of S. pneumoniae from all but one of the patients expressed family 2 **PspA** (7 were **clade** 3, 1 **clade** 4 and 5 **clade** 5). The family 1 **PspA** isolate was **clade** 1. Conclusion: In people over 50 years of age, IPD with different **pneumococcal** strains have induced a significant production of antibodies reactive with rRx1 **PspA** and rPsaA. The study demonstrates the immunogenicity of both proteins and the great cross-reactivity of anti-**PspA** antibodies. It also provides support for the development of a protein **pneumococcal** vaccine for use in the elderly.

L10 ANSWER 22 OF 28 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 5
AN 2000:474386 BIOSIS
DN PREV200000474386
TI Diversity of **PspA**: Mosaic genes and evidence for past recombination in Streptococcus pneumoniae.
AU Hollingshead, Susan K. [Reprint author]; Becker, Robert; Briles, David E.
CS Department of Microbiology, University of Alabama at Birmingham, BBRB654, Birmingham, AL, 35294, USA
SO Infection and Immunity, (October, 2000) Vol. 68, No. 10, pp. 5889-5900. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
ED Entered STN: 1 Nov 2000
Last Updated on STN: 10 Jan 2002
AB **Pneumococcal** surface protein A (**PspA**) is a serologically variable protein of Streptococcus pneumoniae. Twenty-four diverse alleles of the **pspA** gene were sequenced to investigate the genetic basis for serologic diversity and to evaluate the potential of diversity to have an impact on **PspA**'s use in human vaccination. The 24 **pspA** gene sequences from unrelated strains revealed two major allelic types, termed "families," subdivided into **clades**. A highly mosaic gene structure was observed in which individual mosaic sequence blocks in PspAs diverged from each other by over 20% in many cases. This level of divergence exceeds that observed for blocks in the penicillin-binding proteins of S. pneumoniae or in many cross-species comparisons of gene loci. Conversely, because the mosaic pattern is so complex, each pair of **pspA** genes also has numerous shared blocks, but the position of conserved blocks differs from gene pair to gene pair. A central region of **pspA**, important for eliciting protective antibodies, was found in six **clades**, which each

diverge from the other **clades** by >20%. Sequence relationships among the 24 alleles analyzed over three windows were discordant, indicating that intragenic recombination has occurred within this locus. The extensive recombination which generated the mosaic pattern seen in the **pspA** locus suggests that natural selection has operated in the history of this gene locus and underscores the likelihood that **PspA** may be important in the interaction between the **pneumococcus** and its human host.

L10 ANSWER 23 OF 28 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 6
AN 2000:506250 BIOSIS
DN PREV200000506250
TI **Pneumococcal pspA** sequence types of prevalent multiresistant **pneumococcal** strains in the United States and of internationally disseminated clones.
AU Beall, Bernard [Reprint author]; Gherardi, Giovanni; Facklam, Richard R.; Hollingshead, Susan K.
CS Centers for Disease Control and Prevention, 1600 Clifton Rd., NE, Mailstop C02, Atlanta, GA, 30333, USA
SO Journal of Clinical Microbiology, (October, 2000) Vol. 38, No. 10, pp. 3663-3669. print.
CODEN: JCMIDW. ISSN: 0095-1137.
DT Article
LA English
ED Entered STN: 22 Nov 2000
Last Updated on STN: 11 Jan 2002
AB In a recent genotypic survey of beta-lactam-resistant **pneumococci** recovered in different areas of United States during 1997, eight clonal types that each represented 3 to 40 isolates accounted for 134 of 144 isolates (G. Gherardi, C. Whitney, R. Facklam, and B. Beall, J. Infect. Dis. 181:216-229, 2000). We determined the degree of **pspA** gene diversity among these 134 isolates and for 11 previously characterized internationally disseminated multiresistant strains. Thirty-four different **pspA** restriction profiles were determined for an amplicon encompassing the variable portion of the structural gene that encodes the surface-exposed domain of **PspA** and a variable-length proline-rich putative cell wall-associated domain. These restriction profiles closely correlated with those of 33 different **pspA** sequence types of an approximately 230-residue region corresponding to residues 182 to 410 of the strain Rx1 **PspA**. These residues encompass a 100-residue **clade**-defining region known to contain cross-protective epitopes for which 17 sequence types were found. Distinct, conserved **pspA** sequence types were found for the majority of strains within seven of the eight U.S. clonal types assessed, while one pulsed-field gel electrophoresis type was represented by isolates of three distinct **PspA clades**. Sequence typing of **pspA** provides an added level of specificity in the subtyping of isolates and is a necessary first step in determining the components needed in a **PspA** vaccine which could elicit effective cross-protective coverage.

L10 ANSWER 24 OF 28 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 7
AN 2000:174346 BIOSIS
DN PREV200000174346
TI Immunization of healthy adults with a single recombinant **pneumococcal** surface protein A (**PspA**) variant stimulates broadly cross-reactive antibodies to heterologous **PspA** molecules.
AU Nabors, Gary S. [Reprint author]; Braun, Patricia A.; Herrmann, Diane J.; Heise, Martha L.; Pyle, Derek J.; Gravenstein, Stefan; Schilling, Margot; Ferguson, Laura M.; Hollingshead, Susan K.; Briles, David E.; Becker, Robert S.
CS Aventis Pasteur, Discovery Drive, Swiftwater, PA, 18370, USA
SO Vaccine, (March 6, 2000) Vol. 18, No. 17, pp. 1743-1754. print.
CODEN: VACCDE. ISSN: 0264-410X.
DT Article
LA English

ED Entered STN: 3 May 2000
Last Updated on STN: 4 Jan 2002

AB **Pneumococcal** surface protein A (**PspA**) is a highly variable protein found on all strains of **pneumococci**. To be successful, a **PspA**-based vaccine for S. pneumoniae must induce antibodies that are broadly cross-reactive. To address whether cross-reactive antibodies could be induced in man, we evaluated serum from adults immunized with recombinant **clade** 2 **PspA** from strain Rx1. Immunization with 5-125 mug rPspA lead to a significant increase in circulating anti-**PspA** antibodies, as well as antibodies reactive to heterologous rPspA molecules. Increased binding of post-immune sera to 37 **pneumococcal** strains expressing a variety of **PspA** and capsule types was observed, versus pre-immune sera. The extent of cross-**clade** reactivity of human anti-rPspA followed roughly the amount of sequence homology to the non-**clade** 2 antigens. It is hypothesized that priming of humans by natural exposure to S. pneumoniae contributes to the breadth of the cross-reactivity of antibody to **PspA**.

L10 ANSWER 25 OF 28 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 8
AN 1999:606909 CAPLUS
DN 131:241963
TI Streptococcal vaccines based on selection of cross-reactive **pneumococcal** surface proteins
IN Briles, David E.; Hollingshead, Susan; Becker, Robert
PA Uab Research Foundation, USA
SO U.S., 35 pp., Cont.-in-part of U. S. 5,579,768.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 19

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5955089	A	19990921	US 1996-710749	19960920
	JP 2002167399	A2	20020611	JP 2001-227943	19940419
	US 5679768	A	19971021	US 1995-465746	19950606
	CA 2267343	AA	19980326	CA 1997-2267343	19970922
	WO 9811915	A1	19980326	WO 1997-US16761	19970922
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9744287	A1	19980414	AU 1997-44287	19970922
	AU 726927	B2	20001123		
	EP 956043	A1	19991117	EP 1997-942626	19970922
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2000503676	T2	20000328	JP 1998-514944	19970922
	NZ 334811	A	20000929	NZ 1997-334811	19970922
	JP 2003002842	A2	20030108	JP 2002-119707	19970922
	NO 9901340	A	19990518	NO 1999-1340	19990319
	US 6638516	B1	20031028	US 1999-147875	19990524
	US 2004067237	A1	20040408	US 2003-674755	20030930
PRAI	US 1993-48896	B1	19930420		
	US 1995-465746	A2	19950606		
	US 1991-656773	B2	19910215		
	US 1992-835698	B2	19920212		
	JP 1994-80735	A3	19940419		
	US 1996-710749	A	19960920		
	JP 1998-514944	A3	19970922		
	WO 1997-US16761	W	19970922		
	US 1999-147875	A1	19990524		

AB The present invention relates to vaccine composition(s) comprising at least two **pneumococcal** surface protein A (**PspA**) proteins from strains selected from at least one family; the family being defined by

PspAs from strains having greater than or equal to 50% homol. in aligned sequences of a C-terminal region of an alpha helical region of **PspA**. Addnl., the families are further comprised of **clades**, wherein PspAs from strains which belong to a **clade** exhibit at least 75% sequence homol. in aligned sequences of the C-terminal region of the alpha helix of **PspA**. Vaccine compns. of the present invention preferably comprise a min. of 4 and a maximum of 6 strains representing a single **clade** each, and the at least two PspAs are optionally serol. or broadly cross-reactive.

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 26 OF 28 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:690969 CAPLUS
DN 131:321533
TI Epitopic regions and strain selection of **pneumococcal** surface protein C from Streptococcus pneumoniae
IN Briles, David E.; Hollingshead, Susan K.; Brooks-Walter, Alexis
PA University of Alabama at Birmingham, USA
SO PCT Int. Appl., 109 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9953940	A1	19991028	WO 1999-US8895	19990423
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	CA 2328399	AA	19991028	CA 1999-2328399	19990423
	AU 9937584	A1	19991108	AU 1999-37584	19990423
	AU 770378	B2	20040219		
	EP 1073450	A1	20010207	EP 1999-919991	19990423
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002516251	T2	20020604	JP 2000-544343	19990423
	US 2003059438	A1	20030327	US 1999-298523	19990423
	US 2001016200	A1	20010823	US 2000-748875	20001226
	US 2005196405	A1	20050908	US 2003-341201	20030113
PRAI	US 1998-82728P	P	19980423		
	US 1999-298523	A3	19990423		
	WO 1999-US8895	W	19990423		
	US 2000-748875	B1	20001226		

AB Immunization with purified **pneumococcal** surface protein C (PspC) is able to elicit protection against sepsis, and this protection is apparently mediated by antibodies cross-reactive with **PspA**. The genetic diversity present within this locus, herein called pspC, was also investigated by the examination of 12 sequenced alleles, including the previously sequenced alleles of cbpA and spsA, an allele from the genomic sequencing project, and 7 newly sequenced pspC genes. PspC is a chimeric protein which has acquired domains from both interspecies and intraspecies genetic exchanges, and which can be divided into two **clades** based on the sequences in the α-helical and proline-rich domains. The identification of two **clades** of PspC is pertinent to PspC-containing vaccine, immunol. or immunogenic compns, as well as to methods for identifying **PspA**, **pspA**, PspC, pspC, and/or S. pneumoniae. Moreover, the observation that antibodies to the proline-rich regions of **PspA** and PspC can be cross-protective facilitates the design of more efficacious vaccines, e.g., by providing epitopic regions of PspC, epitopes of PspC, and nucleic acid mols. encoding the same. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approx. the same

amts., as **PspA**. Thus, the invention provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compns.
RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 27 OF 28 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 9
AN 2000:64128 BIOSIS
DN PREV200000064128
TI The pspC gene of Streptococcus pneumoniae encodes a polymorphic protein, PspC, which elicits cross-reactive antibodies to **PspA** and provides immunity to **pneumococcal** bacteremia.
AU Brooks-Walter, Alexis [Reprint author]; Briles, David E.; Hollingshead, Susan K.
CS Department of Microbiology, University of Alabama at Birmingham, BBRB 658, Birmingham, AL, USA
SO Infection and Immunity, (Dec., 1999) Vol. 67, No. 12, pp. 6533-6542. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
OS Genbank-AF019904; Genbank-AF067128; Genbank-AJ002054; Genbank-AJ002055; Genbank-Y10818
ED Entered STN: 9 Feb 2000
Last Updated on STN: 3 Jan 2002
AB PspC is one of three designations for a **pneumococcal** surface protein whose gene is present in approximately 75% of all Streptococcus pneumoniae strains. Under the name SpsA, the protein has been shown to bind secretory immunoglobulin A (S. Hammerschmidt, S. R. Talay, P. Brandtzaeg, and G. S. Chhatwal, Mol. Microbiol. 25:1113-1124, 1997). Under the name CbpA, the protein has been shown to interact with human epithelial and endothelial cells (C. Rosenow et al., Mol. Microbiol. 25:819-829, 1997). The gene is paralogous to the **pspA** gene in S. pneumoniae and was thus called pspC (A. Brooks-Walter, R. C. Tart, D. E. Briles, and S. K. Hollingshead, Abstracts of the 97th General Meeting of the American Society for Microbiology 1997). Sequence comparisons of five published and seven new alleles reveal that this gene has a mosaic structure, and modular domains have contributed to gene diversity during evolution. Two major **clades** exist: **clade** A alleles are larger and contain an extra module that is shared with many **pspA** alleles; **clade** B alleles are smaller and lack this **pspA**-like domain. All alleles have a proline-rich domain and a choline-binding repeat domain that show 0% divergence from similar domains in the **PspA** protein. Immunization of a rabbit with a recombinant **clade** B PspC molecule produced antiserum that cross-reacted with both PspC and **PspA** from 15 **pneumococcal** isolates. The cross-reactive antibodies afforded cross-protection in a mouse model system. Mice immunized with PspC were protected against challenge with a strain that expressed **PspA** but not PspC. The **PspA**- and PspC-cross-reactive antibodies were directed to the proline-rich domain present in both molecules.

L10 ANSWER 28 OF 28 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:197416 CAPLUS
DN 128:281705
TI Strain selection of **pneumococcal** surface proteins
IN Becker, Robert S.; Briles, David E.; Hollingshead, Susan
PA Connaught Laboratories, Inc., USA; Becker, Robert S.; Briles, David E.; Hollingshead, Susan
SO PCT Int. Appl., 58 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 19

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9811915	A1	19980326	WO 1997-US16761	19970922

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        W:  AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
            DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ,
            LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL,
            PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US,
            UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
        RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR,
            GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA,
            GN, ML, MR, NE, SN, TD, TG
    US 5955089           A     19990921    US 1996-710749          19960920
    CA 2267343           AA    19980326    CA 1997-2267343         19970922
    AU 9744287           A1    19980414    AU 1997-44287           19970922
    AU 726927            B2    20001123
    EP 956043            A1    19991117    EP 1997-942626          19970922
        R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
            IE, FI
    JP 2000503676        T2    20000328    JP 1998-514944          19970922
    NZ 334811            A     20000929    NZ 1997-334811          19970922
    NO 9901340           A     19990518    NO 1999-1340            19990319
    BR 9908649           A     20011030    BR 1999-8649            19990326
    US 6638516           B1    20031028    US 1999-147875          19990524
    US 2004067237        A1    20040408    US 2003-674755          20030930
PRAI US 1996-710749      A2    19960920
    US 1993-48896        B1    19930420
    US 1995-465746       A2    19950606
    WO 1997-US16761      W     19970922
    US 1999-147875       A1    19990524
AB  The present invention relates to vaccine composition(s) comprising at least two
    PspAs from strains selected from at least one family, the family being
    defined by PspAs from strains belonging to the family having greater than
    or equal to 50 % homol. in aligned sequences of a C-terminal region of an
    alpha helical region of PspA. Addnl., the families are further
    comprised of clades, wherein PspAs from strains which belong to
    a clade exhibit at least 75 % sequence homol. in aligned
    sequences of the C-terminal region of the alpha helix of PspA.
    Vaccine compns. of the present invention preferably comprise a min. of 4
    and a maximum of 6 strains representing a single clade each, and
    the at least two PspAs are optionally serol. or broadly cross-reactive.
RE.CNT  1     THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT


=> s pneumoco? and ((strain BG?) or (strain DBL?) or (strain AC?) or (strain EF?) or (strain
WU?))
   2 FILES SEARCHED...
TERM 'BG?' EXCEEDED TRUNCATION LIMITS - SEARCH ENDED
You have entered a truncated stem which occurs in too many terms.
Make the stem longer and try again.  For example, if your original
term was 'degr?' to search for variations and the abbreviation for
'degradation', you could replace it with the expression '(degrdn OR
degrad?)'.  If your search term was numeric, e.g., 'C>5', reduce the
size of the range.

=> s pneumoco? and ((strain BG8743) or (strain DBL1) or (strain AC94) or (strain EF10197) or
(strain WU2))
L11        130 PNEUMOCO? AND ((STRAIN BG8743) OR (STRAIN DBL1) OR (STRAIN AC94)
                OR (STRAIN EF10197) OR (STRAIN WU2))

=> dup rem l11
PROCESSING COMPLETED FOR L11
L12         62 DUP REM L11 (68 DUPLICATES REMOVED)

=> s l12 and pspa
L13         40 L12 AND PSPA

=> d bib ab 1-
YOU HAVE REQUESTED DATA FROM 40 ANSWERS - CONTINUE? Y/(N):y

L13  ANSWER 1 OF 40  BIOSIS  COPYRIGHT (c) 2006 The Thomson Corporation  on STN
AN   2005:120514  BIOSIS
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DN PREV200500116694
TI The virulence function of Streptococcus pneumoniae surface protein A involves inhibition of complement activation and impairment of complement receptor-mediated protection.
AU Ren, Bing; McCrory, Mark A.; Pass, Christina; Bullard, Daniel C.; Ballantyne, Christie M.; Xu, Yuanyuan; Briles, David E.; Szalai, Alexander J. [Reprint Author]
CS Dept MedDiv Clin Immunol and Rheumatol, Univ Alabama, 437B Tinsley Harrison Tower,1530 3rd Ave S, Birmingham, AL, 35294, USA alex.szalai@ccc.uab.edu
SO Journal of Immunology, (December 15 2004) Vol. 173, No. 12, pp. 7506-7512, 7497. print.
ISSN: 0022-1767 (ISSN print).
DT Article
LA English
ED Entered STN: 23 Mar 2005
Last Updated on STN: 23 Mar 2005
AB Complement is important for elimination of invasive microbes from the host, an action achieved largely through interaction of complement-decorated pathogens with various complement receptors (CR) on phagocytes. **Pneumococcal** surface protein A (**PspA**) has been shown to interfere with complement deposition onto **pneumococci**, but to date the impact of **PspA** on CR-mediated host defense is unknown. To gauge the contribution of CRs to host defense against **pneumococci** and to decipher the impact of **PspA** on CR-dependent host defense, wild-type C57BL/6J mice and mutant mice lacking CR types 1 and 2 (CR1/2-/-), CR3 (CR3-/-), or CR4 (CR4-/-) were challenged with WU2, a **PspA**+ capsular serotype 3 **pneumococcus**, and its **PspA**- mutant JYI119. **Pneumococci** also were used to challenge factor D-deficient (FD-/-), LFA-1-deficient (LFA-1-/-), and CD18-deficient (CD18-/-) mice. We found that FD-/-, CR3-/-, and CR4-/- mice had significantly decreased longevity and survival rate upon infection with WU2. In comparison, **PspA**- **pneumococci** were virulent only in FD-/- and CR1/2-/- mice. Normal mouse serum supported more C3 deposition on **pneumococci** than FD-/- serum, and more iC3b was deposited onto the **PspA**- than the **PspA**+ strain. The combined results confirm earlier conclusions that the alternative pathway of complement activation is indispensable for innate immunity against **pneumococcal** infection and that **PspA** interferes with the protective role of the alternative pathway. Our new results suggest that complement receptors CR1/2, CR3, and CR4 all play important roles in host defense against **pneumococcal** infection.

L13 ANSWER 2 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2004:101872 BIOSIS
DN PREV200400102645
TI Effects of **PspA** and antibodies to **PspA** on activation and deposition of complement on the **pneumococcal** surface.
AU Ren, Bing [Reprint Author]; Szalai, Alexander J.; Hollingshead, Susan K.; Briles, David E.
CS 845 19th St. S., BBRB 658, Box 10, Birmingham, AL, 35294, USA bing_ren@microbio.uab.edu
SO Infection and Immunity, (January 2004) Vol. 72, No. 1, pp. 114-122. print.
ISSN: 0019-9567 (ISSN print).
DT Article
LA English
ED Entered STN: 18 Feb 2004
Last Updated on STN: 18 Feb 2004
AB Streptococcus pneumoniae infection is a frequent cause of pneumonia, otitis media, meningitis, and septicemia. **Pneumococcal** surface protein A (**PspA**) is an important virulence factor on the pathogen surface, and it is known to interfere with complement activation. In this study, flow cytometry was used to study the effects of **PspA** and antibodies to **PspA** on the deposition of complement C3 on the surface of a capsular type 3 **strain**, **WU2**, and its **PspA**- mutant, JY1119. Using naive mouse serum as a complement source, measurable deposition of C3 was observed within 4 min on **PspA**- **pneumococci**, and the amount of

surface-bound C3 accumulated rapidly as the amount of serum was increased. In contrast, very little C3 was deposited on the **PspA+** strain. In nonimmune mouse serum, the classical pathway was the dominant activation pathway triggered by **PspA-** **pneumococci**. Accordingly, EGTA blocked almost all of the complement activation. Moreover, a significant amount of C3 was still deposited on the **PspA-** strain when serum from factor B-deficient mice was used. This deposition was not observed on the **PspA+** **pneumococci**, indicating that **PspA** may inhibit complement deposition via the classical pathway. Furthermore, under the conditions we tested, **PspA** also inhibited C3 deposition when the classical pathway was initiated by antibodies to capsular polysaccharide. Antibodies to **PspA** could overcome the anticomplementary effect of **PspA**, allowing for increased complement activation and C3 deposition onto **PspA+** bacteria.

L13 ANSWER 3 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2004:64032 BIOSIS
DN PREV200400065519
TI **Pneumococcal** surface protein A is expressed in vivo, and antibodies to **PspA** are effective for therapy in a murine model of **pneumococcal** sepsis.
AU Swiatlo, E. [Reprint Author]; King, J.; Nabors, G. S.; Mathews, B.; Briles, D. E.
CS Research Service, VA Medical Center, 1500 Woodrow Wilson Dr., 151, Jackson, MS, 39216, USA
swed@sprintmail.com
SO Infection and Immunity, (December 2003) Vol. 71, No. 12, pp. 7149-7153. print.
ISSN: 0019-9567 (ISSN print).
DT Article
LA English
ED Entered STN: 28 Jan 2004
Last Updated on STN: 28 Jan 2004
AB **Pneumococcal** surface protein A (**PspA**) is an immunogenic protein expressed on the surface of all strains of Streptococcus pneamoniae (**pneumococcus**) and induces antibodies which protect against invasive infection in mice. **Pneumococci** used for infectious challenge in protection studies are typically collected from cultures grown in semisynthetic medium in vitro. The purpose of these studies is to confirm that **PspA** is expressed by **pneumococci** during growth in vivo at a level sufficient for antibodies to **PspA** to be protective. Mice were actively immunized with purified **PspA** or by passive transfer of monoclonal antibody (MAb) and challenged with a capsular type 3 strain in diluted whole blood from bacteremic mice. All were protected against challenge with 10 times the 50% lethal dose (LD50), and mice challenged with 1,000 times the LD50 had increased survival compared with controls. Additionally, nonimmune mice treated with MAbs to **PspA** or **PspA** immune serum at 6 and 12 h after infection with 10 times the LD50 also showed increased survival. Northern blot analysis of RNA from **pneumococci** grown either in vitro or in vivo showed similar levels of **PspA** mRNA. These results demonstrate that **PspA** is expressed in vivo in a mouse model and that immunization with **PspA** induces antibodies to an antigen which is expressed during the course of invasive infection. Immunotherapy with antibodies to **PspA** may have some utility in treating **pneumococcal** infections in humans.

L13 ANSWER 4 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2003:519110 BIOSIS
DN PREV200300520580
TI The influence of **pneumococcal** background on protection in mice immunized with **PspA**.
AU He, X. [Reprint Author]; McDaniel, L. S. [Reprint Author]
CS University of Mississippi Medical Center, Jackson, MS, USA
SO Abstracts of the General Meeting of the American Society for Microbiology, (2003) Vol. 103, pp. D-126. http://www.asmusa.org/mtgsrc/generalmeeting.htm. cd-rom.
Meeting Info.: 103rd American Society for Microbiology General Meeting.

Washington, DC, USA. May 18-22, 2003. American Society for Microbiology. ISSN: 1060-2011 (ISSN print).
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 5 Nov 2003
Last Updated on STN: 5 Nov 2003
AB **PspA** is a promising candidate for a protein based vaccine against Streptococcus pneumoniae. It is a surface protein and virulence factor present on all **pneumococcal** strains. The a-helical domain of **PspA** extends from the cell surface and interacts with the host immune system. Although **PspA** differs among different isolates in both molecular weight and serology, antibodies can cross-react with **PspA** from different strains. **PspA** has been used in human phase I trails. In a mouse model, some **pneumococcal** strains are more virulent and more difficult than others to protect against even when the mice are immunized with **PspA** fragments from the same strains. To determine if the background of the strain in which a particular **PspA** resided affected protection by anti-**PspA** antibodies, we constructed a mutant of S. pneumoniae WU2 by allelic replacement using **pspA** from EF5668. The replacement was confirmed by Western blot and by PCR. Mice were immunized with recombinant peptide fragments from the a-helical domain of **PspA** /EF5668. When challenged with strain EF5668, the overall survival rates were significantly lower than the mice challenged with the mutant strain of WU2 expressing **PspA**/EF5668. These data indicate that the **pneumococcal** background can impact systemic protection in mice immunized with **PspA**.

L13 ANSWER 5 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2003:94716 BIOSIS
DN PREV200300094716
TI Genetic alteration of capsule type but not **PspA** type affects accessibility of surface-bound complement and surface antigens of Streptococcus pneumoniae.
AU Abeyta, Melanie; Hardy, Gail G.; Yother, Janet [Reprint Author]
CS Department of Microbiology, University of Alabama at Birmingham, 845 19th St. S., BBRB 661, Birmingham, AL, 35294, USA
jyother@uab.edu
SO Infection and Immunity, (January 2003) Vol. 71, No. 1, pp. 218-225. print. ISSN: 0019-9567 (ISSN print).
DT Article
LA English
ED Entered STN: 12 Feb 2003
Last Updated on STN: 12 Feb 2003
AB The Streptococcus pneumoniae capsular polysaccharides and **pneumococcal** surface protein A (**PspA**) are major determinants of virulence that are antigenically variable and capable of eliciting protective immune responses. By genetically switching the **pspA** genes of the capsule type 2 strain D39 and the capsule type 3 **strain WU2**, we showed that the different abilities of antibody to **PspA** to protect against these strains was not related to the **PspA** type expressed. Similarly, the level of specific antibody binding to **PspA**, other surface antigens, and surface-localized C3b did not depend on the **PspA** type but instead was correlated with the capsule type. The type 3 **strain WU2** and an isogenic derivative of D39 that expresses the type 3 capsule bound nearly identical amounts of antibody to **PspA** and other surface antigens, and these amounts were less than one-half the amount observed with the type 2 parent strain D39. Expression of the type 3 capsule in D39 also reduced the amount of C3b deposited and its accessibility to antibody, resulting in a level intermediate between the levels observed with WU2 and D39. Despite these effects, the capsule type was not the determining factor in anti-**PspA**-mediated protection, as both D39 and its derivative expressing the type 3 capsule were more resistant to protection than WU2. The specific combination of **PspA** and capsule type also did not determine the level of protection. The capsule structure is thus a major determinant in accessibility of surface antigens to antibody, but certain strains appear

to express other factors that can influence antibody-mediated protection.

L13 ANSWER 6 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2003:94698 BIOSIS
DN PREV200300094698
TI Both family 1 and family 2 **PspA** proteins can inhibit complement deposition and confer virulence to a capsular serotype 3 strain of Streptococcus pneumoniae.
AU Ren, Bing [Reprint Author]; Szalai, Alexander J.; Thomas, Orlanda; Hollingshead, Susan K.; Briles, David E.
CS 845 19th St. S., BBRB 658, Box 10, Birmingham, AL, 35294, USA
bing_ren@microbio.uab.edu
SO Infection and Immunity, (January 2003) Vol. 71, No. 1, pp. 75-85. print.
ISSN: 0019-9567 (ISSN print).
DT Article
LA English
ED Entered STN: 12 Feb 2003
Last Updated on STN: 12 Feb 2003
AB **Pneumococcal** surface protein A (**PspA**), a virulence factor of Streptococcus pneumoniae, is exceptionally diverse, being classified into two major families which are over 50% divergent by sequence analysis. A family 1 **PspA** from **strain WU2** was previously shown to impede the clearance of **pneumococci** from mouse blood and to interfere with complement deposition on the bacterial surface. To determine whether a family 2 **PspA** can perform the same role as family 1 **PspA**, the family 1 **PspA** (from **strain WU2**) was replaced with a family 2 **PspA** (from strain TIGR4) by molecular genetic methods to make an isogenic pair of strains expressing different **PspA** proteins. Surface binding of lactoferrin and interference with C3 deposition by the two types of **PspA** proteins were determined by flow cytometry, and virulence was assessed in a mouse bacteremia model. Although the family 2 **PspA** appeared to bind less human lactoferrin than did the family 1 **PspA**, both **PspA** proteins could interfere with complement deposition on the **pneumococcal** surface and could provide full virulence in the mouse infection model. A mutant form of the family 2 **PspA** with a deletion within the choline-binding region was also produced. **Pneumococci** with this mutant **PspA** failed to bind human lactoferrin even though the **PspA** was present on the **pneumococcal** surface. The mutant **PspA** only partially interfered with complement deposition and moderately attenuated virulence. These results suggest that family 1 and family 2 **PspA** proteins play similar roles in virulence and that surface accessibility of **PspA** is important for their function.

L13 ANSWER 7 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2002:249349 BIOSIS
DN PREV200200249349
TI Immune responses to recombinant **pneumococcal PspA** antigen delivered by live attenuated Salmonella enterica serovar Typhimurium vaccine.
AU Kang, Ho Young; Srinivasan, Jay; Curtiss, Roy, III [Reprint author]
CS Department of Biology, Washington University, One Brookings Dr., Saint Louis, MO, 63130-4899, USA
rcurtiss@biology.wustl.edu
SO Infection and Immunity, (April, 2002) Vol. 70, No. 4, pp. 1739-1749. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
ED Entered STN: 17 Apr 2002
Last Updated on STN: 17 Apr 2002
AB Attenuated Salmonella enterica serovar Typhimurium expressing recombinant antigens from other pathogens elicits primarily a Th1-type dominant immune response to both recombinant and Salmonella antigens. The immunogenicity and appropriate subcellular location of the recombinant antigen in the Salmonella vaccine strain may contribute to augmenting immune responses by facilitating adequate exposure of recombinant antigen to

antigen-presenting cells for processing. To allow for secretion from gram-negative bacteria and overexpression of antigen, a DNA fragment encoding a highly antigenic alpha-helical region of **PspA** (**pneumococcal** surface protein A) was subcloned downstream from the beta-lactamase signal sequence in the multicopy Asd+ pYA3493 vector to create pYA3494. pYA3493 was derived from a class of Asd+ vectors with reduced expression of Asd to minimize selective disadvantage and enhance immunization of expressed recombinant antigens. The S. enterica serovar Typhimurium vaccine strain was constructed by the introduction of deletion mutations DELTAcrp-28 and DELTAasdA16. Approximately 50% of the recombinant **PspA** (rPspA) expressed in a Salmonella strain harboring pYA3494 was detected in the combined supernatant and periplasmic fractions of broth-grown recombinant Salmonella. After a single oral immunization in BALB/c mice with 109 CFU of the recombinant Salmonella vaccine strain carrying pYA3494, immunoglobulin G (IgG) antibody responses were stimulated to both the heterologous antigen rPspA and Salmonella lipopolysaccharide (LPS) and outer membrane proteins (OMPs). About half, and even more at later times after immunization, of the antibodies induced to rPspA were IgG1 (indicating a Th2-type response), whereas 60 to 70% of the antibodies to LPS and 80 to 90% of those to OMPs were IgG2a (indicating a Th1-type response). A sublethal infection with Streptococcus pneumoniae WU2 boosted **PspA** antibody levels and maintained IgG2a/IgG1 ratios similar to those seen before the challenge. Oral immunization with Salmonella-**PspA** vaccine protected 60% of immunized mice from death after intraperitoneal challenge with 50 times the 50% lethal dose of virulent S. pneumoniae WU2.

L13 ANSWER 8 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2002:223193 BIOSIS
DN PREV200200223193
TI DNA vaccination with regions within the alpha-helical domain of **PspA**/Rx1 protects against Streptococcus pneumoniae.
AU Bosarge, J. R. [Reprint author]; Ethridge, A. [Reprint author]; Moore, Q. [Reprint author]; McDaniel, L. S. [Reprint author]
CS University of Mississippi Medical Center, Jackson, MS, USA
SO Abstracts of the General Meeting of the American Society for Microbiology, (2001) Vol. 101, pp. 338. print.
Meeting Info.: 101st General Meeting of the American Society for Microbiology. Orlando, FL, USA. May 20-24, 2001. American Society of Microbiology.
ISSN: 1060-2011.
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 3 Apr 2002
Last Updated on STN: 3 Apr 2002
AB **Pneumococcal** surface protein A (**PspA**) is a **pneumococcal** virulence factor capable of eliciting protective immunity. We have previously demonstrated that plasmid pJB100, expressing the region encoding the alpha-helical domain of **PspA**/Rx1, is effective in genetic immunization in mice. In the current study, immune serum from pJB100 immunized mice was used in Western blot analysis of recombinant protein fragments corresponding to different regions of the alpha-helix. The pJB100 immune serum reacted with fragments containing amino acid residues 110-288. This data indicated there are immunogenic regions within the alpha-helical domain responsible for eliciting protection. Therefore, we examined the ability of genetic constructs expressing regions within the **PspA** alpha-helix to elicit protection. Genetic constructs were made by cloning regions corresponding to different portions of the **PspA** alpha-helix into an eukaryotic expression vector. Groups of mice were then immunized and boosted with either vaccine plasmid or control plasmid. Serum was collected and anti-**PspA** antibody responses were determined by ELISA. Following immunization, mice were challenged intravenously with a lethal dose of **pneumococcal strain WU2**. Survival and antibody responses in mice receiving plasmid pJB132, expressing amino acids 101-204 of **PspA**/Rx1, were comparable to mice receiving pJB100. Our data confirms that there are regions within the alpha-helix of **PspA** capable of eliciting protective immunity in genetic

immunization.

L13 ANSWER 9 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2002:201471 BIOSIS
DN PREV200200201471
TI Relative effect of family 1 and family 2 PspAs on virulence of capsular type 3 Streptococcus pneumoniae.
AU Ren, B. [Reprint author]; Hollingshead, S. K. [Reprint author]; Briles, D. E. [Reprint author]
CS University of Alabama at Birmingham, Birmingham, AL, USA
SO Abstracts of the General Meeting of the American Society for Microbiology, (2001) Vol. 101, pp. 304. print.
Meeting Info.: 101st General Meeting of the American Society for Microbiology. Orlando, FL, USA. May 20-24, 2001. American Society for Microbiology.
ISSN: 1060-2011.
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 20 Mar 2002
Last Updated on STN: 20 Mar 2002
AB **Pneumococcal** surface protein A (**PspA**) is a serologically variable protein and is required for full virulence of **pneumococci** in mice. The mature **PspA** protein has four distinct domains: alpha-helical region, proline rich region, choline-binding repeat domain and a 17 amino acid tail. The alpha-helical region is the functional domain and the sequence of this region shows exceptional diversity. The C-terminal choline-binding region consisting of about ten 20 amino acid repeats is required for the attachment of **PspA** on the cell surface. Previous studies showed that the loss of five repeats causes the release of **PspA** from the cell in strain Rx1 and loss of 1.5 repeats is sufficient to release **PspA** in capsular type 3 **strain WU2**. Based upon sequence differences over the alpha-helical region, PspAs are divided into three families. **PspA** of WU2, belongs to family type 1, while the **PspA** from capsular type 4 train, TIGR, shows 40% amino acid identity with **PspA**/WU2 and belongs to family 2. Studies with WU2 have shown that **PspA** plays an important role in inhibition of serum complement activation in infected mice. In this study, we replaced the **PspA** of WU2 with **PspA**/TIGR to evaluate the virulence role of **PspA**/TIGR in the WU2 genetic background. In an i.v. infection model in CBA/N mice, mean time to death of the isogenic BR93.1 strain (expressing full length **PspA**/TIGR in WU2 genetic background) was statistically indistinguishable from that of wild type WU2. In contrast, both WU2 and BR93.1 were significantly different from other two WU2 derivatives: JY1123 expressing a truncated form of **PspA** releasing from cell surface, and JY1119 (**pspA**-). Thus, both family 1 and family 2 PspAs appear to have similar effects on virulence of capsular type 3 **pneumococci**. A second WU2 transformant strain named BR92.1 expressed a shortened form of **PspA**/TIGR, which only contains four C-terminal repeat units instead of ten repeats. The truncated **PspA**/TIGR in BR92.1 was found still attached on cell surface. However, this strain was partially attenuated in virulence when compared to WU2 and BR93.1. Further studies are planed to compare the effects of family 1 and family 2 **PspA** on complement fixation.

L13 ANSWER 10 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 1999:445140 BIOSIS
DN PREV199900445140
TI Resistance to both complement activation and phagocytosis in type 3 **pneumococci** is mediated by the binding of complement regulatory protein factor H.
AU Neeleman, Chris; Geelen, Sibyl P. M.; Aerts, Piet C.; Daha, Mohammed R.; Mollnes, Tom E.; Roord, John J.; Posthuma, George; van Dijk, Hans; Fleer, Andre [Reprint author]
CS University Hospital for Children and Youth, "Het Wilhelmina Kinderziekenhuis", 3508 AB, Utrecht, Netherlands

SO Infection and Immunity, (Sept., 1999) Vol. 67, No. 9, pp. 4517-4524. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
ED Entered STN: 26 Oct 1999
Last Updated on STN: 26 Oct 1999
AB To study the role of surface-associated proteins in the virulence of Streptococcus pneumoniae, we used two serotype 3 strains, ATCC 6303 and WU2, and two **PspA**-negative mutants of WU2, an encapsulated one, JY1123 (Caps+/**PspA**-), and an unencapsulated one, DW3.8 (Caps-/**PspA**-). ATCC 6303 and WU2 were highly virulent in mice, while the virulence of JY1123 was slightly decreased (50% lethal doses (LD50s), 24, 6, and 147 CFU/mouse, respectively); DW3.8 was avirulent (LD50, 2 X 108 CFU). In vitro, ATCC 6303, WU2, and JY1123 (Caps+/**PspA**-) strongly resisted complement activation and complement-dependent opsonophagocytosis, whereas DW3.8 (Caps-/**PspA**-) was easily phagocytized in fresh serum. Trypsin treatment of ATCC 6303, WU2, and JY1123 (Caps+/**PspA**-) resulted in enhanced complement activation and complement-dependent opsonophagocytosis. Trypsin had no deleterious effect on the polysaccharide capsule. In addition, trypsin pretreatment of ATCC 6303 strongly reduced virulence upon intraperitoneal challenge in mice. This indicated that surface proteins play a role in the resistance to complement activation and opsonophagocytosis and contribute to the virulence of type 3 **pneumococci**. In subsequent experiments, we could show that the modulation of complement activation was associated with surface components that bind complement regulator factor H; binding is trypsin sensitive and independent of prior complement activation. Immunoblotting of cell wall proteins of the virulent strain ATCC 6303 with anti-human factor H antibody revealed three factor H-binding proteins of 88, 150, and 196 kDa. Immunogold electron microscopy showed a close association of factor H-binding components with the outer surface of the cell wall. The role of these factor H-binding surface proteins in the virulence of **pneumococci** is interesting and warrants further investigation.

L13 ANSWER 11 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 1998:393361 BIOSIS
DN PREV199800393361
TI A live recombinant avirulent oral Salmonella vaccine expressing **pneumococcal** surface protein A induces protective responses against Streptococcus pneumoniae.
AU Nayak, Amiya R.; Tinge, Steven A.; Tart, Rebecca C.; McDaniel, Larry S.; Briles, David E.; Curtiss, Roy, III [Reprint author]
CS Dep. Biol., Washington Univ., Campus Box 1137, One Brookings Dr., St. Louis, MO 63130-4899, USA
SO Infection and Immunity, (Aug., 1998) Vol. 66, No. 8, pp. 3744-3751. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
ED Entered STN: 10 Sep 1998
Last Updated on STN: 10 Sep 1998
AB A live oral recombinant Salmonella vaccine strain expressing **pneumococcal** surface protein A (**PspA**) was developed. The strain was attenuated with DELTAcya DELTAcrp mutations. Stable expression of **PspA** was achieved by the use of the balanced-lethal vector-host system, which employs an asd deletion in the host chromosome to impose an obligate requirement for diaminopimelic acid. The chromosomal DELTAasd mutation was complemented by a plasmid vector possessing the asd+ gene. A portion of the **pspA** gene from Streptococcus pneumoniae Rx1 was cloned onto a multicopy Asd+ vector. After oral immunization, the recombinant Salmonella-**PspA** vaccine strain colonized the Peyer's patches, spleens, and livers of BALB/cByJ and CBA/N mice and stimulated humoral and mucosal antibody responses. Oral immunization of outbred New Zealand White rabbits with the recombinant Salmonella strain induced significant anti. **PspA** immunoglobulin G titers in serum and vaginal secretions. Polyclonal sera from orally immunized mice detected **PspA** on the S. pneumoniae cell surface

as revealed by immunofluorescence. Oral immunization of BALB/cJ mice with the **PspA**-producing Salmonella strain elicited antibody to **PspA** and resistance to challenge by the mouse-virulent human clinical isolate S. pneumoniae WU2. Immune sera from orally immunized mice conferred passive protection against otherwise lethal intraperitoneal or intravascular challenge with **strain WU2**.

L13 ANSWER 12 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 1998:212239 BIOSIS
DN PREV199800212239
TI Enhanced protective antibody responses to **PspA** after intranasal or subcutaneous injections of **PspA** genetically fused to granulocyte-macrophage colony-stimulating factor or interleukin-2.
AU Wortham, Charles; Grinberg, Luba; Kaslow, David C.; Briles, David E.; McDaniel, Larry S.; Lees, Andrew; Flora, Michael; Snapper, Clifford M.; Mond, James J. [Reprint author]
CS Dep. Medicine, Uniformed Serv. Univ. Health Sci., 4301 Jones Bridge Road, Bethesda, MD 20814-4799, USA
SO Infection and Immunity, (April, 1998) Vol. 66, No. 4, pp. 1513-1520. print.
CODEN: INFIBR. ISSN: 0019-9567.
DT Article
LA English
ED Entered STN: 11 May 1998
Last Updated on STN: 11 May 1998
AB Antibody to **pneumococcal** surface protein A (**PspA**) has been shown to be protective for Streptococcus pneumoniae infections in mice. In an attempt to define a model for inducing protective antibody to **PspA** in the absence of adjuvant, we designed two genetic fusions, **PspA**-interleukin-2 (IL-2)) and **PspA**-granulocyte-macrophage colony-stimulating factor (GM-CSF). These constructs maintained high cytokine function in vitro, as tested by their activity on IL-2 or GM-CSF-dependent cell lines. While intranasal immunization with **PspA** induced no detectable anti-**PspA** response, both **PspA**-IL-2 and **PspA**-GM-CSF stimulated high immunoglobulin G1 (IgG1) antibody responses. Interestingly, only the **PspA** -IL-2, not the **PspA**-GM-CSF, construct stimulated IgG2a antibody responses, suggesting that this construct directed the response along a TH1-dependent pathway. Comparable enhancement of the anti-**PspA** response with similar isotype profiles was observed after subcutaneous immunization as well. The enhancement observed with **PspA**-IL-2 was dependent on IL-2 activity in that it was not seen in IL-2 receptor knockout mice, while **PspA** in alum induced high-titer antibody in these mice. The antibody was tested for its protective activity in a mouse lethality model using S. pneumoniae WU-R2. Passive transfer of 1:90 dilutions of sera from mice immunized with **PspA**-IL-2 and **PspA**-GM-CSF elicited protection of CBA/N mice against intravenous challenge with over 170 50% lethal doses of capsular type 3 **strain WU2**. Only 0.17 mug or less of IgG antibody to **PspA** was able to provide passive protection against otherwise fatal challenge with S. pneumoniae. The data demonstrate that designing protein-cytokine fusions may be a useful approach for mucosal immunization and can induce high-titer systemic protective antibody responses.

L13 ANSWER 13 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 1996:113184 BIOSIS
DN PREV199698685319
TI Truncated Streptococcus pneumoniae **PspA** molecules elicit cross-protective immunity against **pneumococcal** challenge in mice.
AU Tart, Rebecca Creech [Reprint author]; McDaniel, Larry S.; Ralph, Beth A.; Briles, David E.
CS Dep. Microbiol., Univ. Alabama at Birmingham, 662 BBRB, Mail Box 10, Brimingham, AL 35294-2170, USA
SO Journal of Infectious Diseases, (1996) Vol. 173, No. 2, pp. 380-386.
CODEN: JIDIAQ. ISSN: 0022-1899.
DT Article

LA English
ED Entered STN: 12 Mar 1996
Last Updated on STN: 12 Mar 1996
AB Immunization with **pneumococcal** surface protein A (**PspA**) from Streptococcus pneumoniae strain Rx1 cross-protects mice against challenge with diverse **pneumococci**. Truncated Rx1 **PspA**, consisting of amino acids 192-588, elicits protection against the mouse-virulent **strain WU2**. The possibility that homologous regions of other PspAs could also elicit cross-protection was investigated. Oligonucleotide primers designed according to the Rx1 **pspA** gene sequence were used to amplify chromosomal DNA from 15 diverse **pneumococci**. Three recombinant PspAs were evaluated for their ability to elicit protection in mice against challenge with 7 strains representing capsular types 3, 4, 5, 6A, and 6B. Two of the three truncated PspAs each elicited cross-protection against 71%-100% of the S. pneumoniae challenge strains examined. These data suggest that this technique may be useful for the generation of diverse PspAs for inclusion in a broadly protective **pneumococcal** vaccine.

L13 ANSWER 14 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 1995:158490 BIOSIS
DN PREV199598172790
TI Localization of protection-eliciting epitopes on **PspA** of Streptococcus pneumoniae between amino acid residues 192 and 260.
AU McDaniel, Larry S. [Reprint author]; Ralph, Beth A.; McDaniel, D. Olga; Briles, David E.
CS Bacterial Pathogenesis Lab., Univ. Ala. Birmingham, 670 Bevill Biomedical Res. Building, Birmingham, AL 35294, USA
SO Microbial Pathogenesis, (1994) Vol. 17, No. 5, pp. 323-337.
CODEN: MIPAEV. ISSN: 0882-4010.
DT Article
LA English
ED Entered STN: 11 Apr 1995
Last Updated on STN: 11 Apr 1995
AB **Pneumococcal** surface protein A (**PspA**) is a virulence factor of Streptococcus pneumoniae that can elicit a protective antibody response. The **pspA** gene of strain Rx1 encodes a 65 kDa molecule composed of 588 amino acids. The N-terminal 288 amino acids are highly charged, and predict an alpha-helical coiled-coil protein structure. All monoclonal antibodies (MAbs) to **PspA**, obtained by screening against whole **pneumococci**, bind to the alpha-helical region of **PspA**, suggesting that this region is surface exposed. The C-terminal 217 amino acids of **PspA** contain the surface anchor of **PspA** and does not appear to be alpha-helical. In the middle of the molecule is a proline-rich region that is thought to traverse the cell wall. In this study we have mapped the immunogenic epitopes detected by 9 MAbs that were made against strain Rx1 **PspA**. Five of the MAb also react with the **PspA** of mouse virulent **strain WU2**. All epitopes were found in one of two portions of the alpha-helical region. One comprised the first 115 amino acids, and the other was within amino acids 192 and 260. The five MAbs that recognize WU2 **PspA**, but not the remaining four MAbs, were protective against **strain WU2**. The epitopes detected by four of the five protective MAbs mapped to region 192 to 260 of Rx1 **PspA**. The existence of protective epitopes in this region was confirmed by demonstrating that mice immunized with the cloned fragment containing these residues were protected from fatal infection with WU2. Since amino acids 192 to 260 are in the region of **PspA** anticipated to be adjacent to the cell wall, and probably well covered by capsule, the means by which antibodies to the region lead to protection is not obvious.

L13 ANSWER 15 OF 40 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 1987:190064 BIOSIS
DN PREV198783098188; BA83:98188
TI USE OF INSERTIONAL INACTIVATION TO FACILITATE STUDIES OF BIOLOGICAL PROPERTIES OF **PNEUMOCOCCAL** SURFACE PROTEIN A **PSPA**.
AU MCDANIEL L S [Reprint author]; YOTHER J; VIJAYAKUMAR M; MCGARRY L; GUILD W

R; BRILES D E
CS 224 TUMOR INST, UNIV OF ALABAMA AT BRIMINGHAM, UNIV STN, BIRMINGHAM, AL 35294, USA
SO Journal of Experimental Medicine, (1987) Vol. 165, No. 2, pp. 381-394. CODEN: JEMEAV. ISSN: 0022-1007.
DT Article
FS BA
LA ENGLISH
ED Entered STN: 20 Apr 1987
Last Updated on STN: 20 Apr 1987
AB **PspA** is a cell surface protein of Streptococcus pneumoniae that is present on a number of clinical isolates as well as the nonencapsulated laboratory strain Rx1. In a previous report (8) we have shown that mAbs directed against **PspA** can protect mice from at least some of the **pneumococcal** strains bearing this protein. In our present report we have produced insertional inactivation mutants that lack **PspA** and have used these mutants to demonstrate that **PspA** can play a role in **pneumococcal** virulence and that anti-**PspA** immunity can lead to protection against **pneumococcal** infection. **PspA**- mutants were obtained using derivatives of plasmid pVA891 carrying chromosomal fragments from Rx1. From one of the mutants, we cloned a 550 bp fragment of the **pneumococcal** gene into pVA891 and transferred this chimeric plasmid, designating pKSD300, into Escherichia coli. After transformation of pKSD300 into Rx1, **PspA** production is not detected. In colony hybridization experiments, the 550 bp fragment hybridizes specifically to **pneumococcal** isolates in a pattern consistent with the hypothesis that the fragment is a portion of the **pspA** structural gene that is different from the portions coding for the antigen determinants detected by mAbs Xi64 or Xi126. When X-linked immunodeficient (xid) CBA/N mice were immunized with wild-type Rx1, they were resistant to challenge with type 3 **strain WU2**. However, when these mice were immunized with a **PspA** - mutant of Rx1, they failed to survive the subsequent challenge, indicating that immunity to **PspA** can contribute to the resistance to **pneumococcal** infection. Using pKSD300 we insertionally inactivated **pspA** in D39, a virulent strain of S. pneumoniae. When injected intravenously there was a 10-fold greater reduction of the mutant **pneumococci** in the blood, as compared to the wild-type D39.

L13 ANSWER 16 OF 40 USPATFULL on STN
AN 2005:226556 USPATFULL
TI **PNEUMOCOCCAL** SURFACE PROTEIN C (PSPC), EPITOPIC REGIONS AND STRAIN SELECTION THEREOF, AND USES THEREFOR
IN Briles, David E., Birmingham, AL, UNITED STATES
Hollingshead, Susan K., Birmingham, AL, UNITED STATES
Brooks-Walter, Alexis, Birmingham, AL, UNITED STATES
PI US 2005196405 A1 20050908
AI US 2003-341201 A1 20030113 (10)
RLI Continuation of Ser. No. US 2000-748875, filed on 26 Dec 2000, ABANDONED
Division of Ser. No. US 1999-298523, filed on 23 Apr 1999, PENDING
PRAI US 1998-82728P 19980423 (60)
DT Utility
FS APPLICATION
LREP Michael L. Goldman, Esq., NIXON PEABODY LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051, US
CLMN Number of Claims: 10
ECL Exemplary Claim: 1-27
DRWN 50 Drawing Page(s)
LN.CNT 4782
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed and claimed are: epitopic regions of **Pneumococcal** Surface Protein C or "PspC", different clades of PspC, isolated and/or purified nucleic acid molecules such as DNA encoding a fragment or portion of PspC such as an epitopic region of PspC or at least one epitope of PspC, uses for such nucleic acid molecules, e.g., to detect the presence of PspC or of S. pneumoniae by detecting a nucleic acid molecule therefor in a sample such as by amplification and/or a polymerase chain reaction, vectors or plasmids which contain and/or

express such nucleic acid molecles, e.g., in vitro or in vivo, immunological, immunogenic or vaccine compositions including at least one PspC and/or a portion thereof (such as at least one epitopic region of at least one PspC and/or at least one polypeptide encoding at least one epitope of at least one PspC), either alone or in further combination with at least one second **pneumococcal** antigen, such as at least one different PspC and/or a fragment thereof and/or at least one **PspA** and/or at least one epitopic region of at least one **PspA** and/or at least one polypeptide including at least one epitope of **PspA**. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approximately the same amounts, as **PspA** . Thus, the invention further provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compositions.

L13 ANSWER 17 OF 40 USPATFULL on STN
AN 2004:101977 USPATFULL
TI **Pneumococcal** genes, portions thereof, expression products therefrom, and uses of such genes, portions and products
IN Briles, David E., Birmingham, AL, UNITED STATES
McDaniel, Larry S., Ridgland, MS, UNITED STATES
Swiatlo, Edwin, Birmington, AL, UNITED STATES
Yother, Janet, Birmingham, AL, UNITED STATES
Crain, Marilyn J., Birmingham, AL, UNITED STATES
Hollingshead, Susan, Birmingham, AL, UNITED STATES
Tart, Rebecca, Benson, NC, UNITED STATES
Brooks-Walter, Alexis, Birmingham, AL, UNITED STATES
PI US 2004077847 A1 20040422
AI US 2002-299636 A1 20021119 (10)
RLI Division of Ser. No. US 1996-714741, filed on 16 Sep 1996, GRANTED, Pat. No. US 6500613 Continuation-in-part of Ser. No. US 1995-529055, filed on 15 Sep 1995, GRANTED, Pat. No. US 6592876 Continuation-in-part of Ser. No. US 1994-226844, filed on 13 Apr 1994, GRANTED, Pat. No. US 5586225 Continuation-in-part of Ser. No. US 1993-93907, filed on 20 Jul 1993, ABANDONED Continuation-in-part of Ser. No. US 1992-884918, filed on 18 May 1992, ABANDONED Continuation-in-part of Ser. No. US 1995-482981, filed on 7 Jun 1995, GRANTED, Pat. No. US 6232116 Continuation-in-part of Ser. No. US 1995-458399, filed on 2 Jun 1995, GRANTED, Pat. No. US 6231870 Continuation-in-part of Ser. No. US 1995-446201, filed on 19 May 1995, GRANTED, Pat. No. US 6042838 Continuation-in-part of Ser. No. US 1994-246636, filed on 20 May 1994, GRANTED, Pat. No. US 5965141 Continuation-in-part of Ser. No. US 1994-319795, filed on 7 Oct 1994, GRANTED, Pat. No. US 5980909 Continuation-in-part of Ser. No. US 1993-72070, filed on 3 Jun 1993, GRANTED, Pat. No. US 5476929 Continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, ABANDONED
PRAI JP 1993-88369 19930415
JP 1993-287079 19931116
DT Utility
FS APPLICATION
LREP Michael L. Goldman, NIXON PEABODY LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051
CLMN Number of Claims: 3
ECL Exemplary Claim: 1
DRWN 69 Drawing Page(s)
LN.CNT 6753
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to **pneumococcal** genes, portions thereof, expression products therefrom and uses of such genes, portions and products; especially to genes of Streptococcus pneumoniae, e.g., the gene encoding **pneumococcal** surface protein A (**PspA**), i.e., the **pspA** gene, the gene encoding **pneumococcal** surface protein A-like proteins, such as **pspA**-like genes, e.g., the gene encoding **pneumococcal** surface protein C (PspC), i.e., the pspC gene, portions of such genes, expression products therefrom, and the uses of such genes, portions thereof and expression products therefrom.

L13 ANSWER 18 OF 40 USPATFULL on STN
AN 2004:88268 USPATFULL
TI Strain selection of **pneumococcal** surface proteins
IN Becker, Robert S., Henryville, PA, UNITED STATES
Briles, David E., Birmingham, AL, UNITED STATES
Hollingshead, Susan, Birmingham, AL, UNITED STATES
PI US 2004067237 A1 20040408
AI US 2003-674755 A1 20030930 (10)
RLI Continuation of Ser. No. US 1999-147875, filed on 24 May 1999, GRANTED, Pat. No. US 6638516 A 371 of International Ser. No. WO 1997-US16761, filed on 22 Sep 1997, PENDING Continuation-in-part of Ser. No. US 1996-710749, filed on 20 Sep 1996, GRANTED, Pat. No. US 5955089
DT Utility
FS APPLICATION
LREP Nixon Peabody LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603-1051
CLMN Number of Claims: 34
ECL Exemplary Claim: 1
DRWN 10 Drawing Page(s)
LN.CNT 1826
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to vaccine composition(s) comprising at least two PspAs from strains selected from at least one family, the family being defined by PspAs from strains belonging to the family having greater than or equal to 50% homology in aligned sequences of a C-terminal region of an alpha helical region of **PspA**. Additionally, the families are further comprised of clades, wherein PspAs from strains which belong to a clade exhibit at least 75% sequence homology in aligned sequences of the C-terminal region of the alpha helix of **PspA**. Vaccine compositions of the present invention preferably comprise a minimum of 4 and a maximum of 6 strains representing a single clade each, and the at least two PspAs are optionally serologically or broadly cross-reactive.

L13 ANSWER 19 OF 40 USPATFULL on STN
AN 2003:289313 USPATFULL
TI Streptococcus pneumoniae 37-kDa surface adhesin a protein
IN Sampson, Jacquelyn, College Park, GA, UNITED STATES
Russell, Harold, Efland, NC, UNITED STATES
Tharpe, Jean A,, Lithonia, GA, UNITED STATES
Ades, Edwin W., Atlanta, GA, UNITED STATES
Carlone, George M., Stone Mountain, GA, UNITED STATES
PI US 2003204074 A1 20031030
AI US 2003-455109 A1 20030604 (10)
RLI Division of Ser. No. US 2001-754809, filed on 3 Jan 2001, PENDING Division of Ser. No. US 1998-221753, filed on 28 Dec 1998, GRANTED, Pat. No. US 6217884 Division of Ser. No. US 1996-715131, filed on 17 Sep 1996, GRANTED, Pat. No. US 5854416 Continuation-in-part of Ser. No. US 1994-222179, filed on 4 Apr 1994, ABANDONED Continuation-in-part of Ser. No. US 1991-791377, filed on 17 Sep 1991, GRANTED, Pat. No. US 5422427
DT Utility
FS APPLICATION
LREP NEEDLE & ROSENBERG, P.C., SUITE 1000, 999 PEACHTREE STREET, ATLANTA, GA, 30309-3915
CLMN Number of Claims: 26
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 1949
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides a nucleic acid encoding the 37-kDa protein from Streptococcus pneumoniae. Also provided are isolated nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. The invention also provides purified polypeptides encoded by the nucleic acid encoding the 37-kDa protein from and the nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. Also provided are antibodies which selectively binds the polypeptides encoded by the nucleic acid encoding the 37-kDa protein and the nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. Also provided are vaccines comprising

immunogenic polypeptides encoded by the nucleic acid encoding the 37-kDa protein and the nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. Further provided is a method of detecting the presence of Streptococcus pneumoniae in a sample comprising the steps of contacting a sample suspected of containing Streptococcus pneumoniae with nucleic acid primers capable of hybridizing to a nucleic acid comprising a portion of the nucleic acid encoding the 37-kDa protein, amplifying the nucleic acid and detecting the presence of an amplification product, the presence of the amplification product indicating the presence of Streptococcus pneumoniae in the sample. Further provided are methods of detecting the presence of Streptococcus pneumoniae in a sample using antibodies or antigens, methods of preventing and treating Streptococcus pneumoniae infection in a subject.

L13 ANSWER 20 OF 40 USPATFULL on STN
AN 2003:190559 USPATFULL
TI **Pneumococcal** genes, portions thereof, expression products therefrom, and uses of such genes, portions and products
IN Briles, David E., Birmingham, AL, United States
McDaniel, Larry S., Ridgland, MS, United States
Swiatlo, Edwin, Birmingham, AL, United States
Yother, Janet, Birmingham, AL, United States
Brooks-Walter, Alexis, Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 6592876 B1 20030715
AI US 1995-529055 19950915 (8)
RLI Continuation-in-part of Ser. No. US 1995-465746, filed on 6 Jun 1995, now patented, Pat. No. US 5679768 Continuation of Ser. No. US 1993-48896, filed on 20 Apr 1993, now abandoned
DT Utility
FS GRANTED
EXNAM Primary Examiner: Swartz, Rodney P
LREP Nixon Peabody LLP
CLMN Number of Claims: 3
ECL Exemplary Claim: 1
DRWN 34 Drawing Figure(s); 32 Drawing Page(s)
LN.CNT 5557
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB PspAs, portions thereof, DNA therefor, and immunological compositions, primers and probes based thereon are disclosed claimed.

L13 ANSWER 21 OF 40 USPATFULL on STN
AN 2003:153639 USPATFULL
TI Streptococcus pneumoniale 37-kDa surface adhesion a protein
IN Sampson, Jacquelyn, College Park, GA, UNITED STATES
Russell, Harold, Efland, NC, UNITED STATES
Tharpe, Jean A., Lithonia, GA, UNITED STATES
Ades, Edwin W., Atlanta, GA, UNITED STATES
Carlone, George M., Stone Mountain, GA, UNITED STATES
PI US 2003105307 A1 20030605
US 6773880 B2 20040810
AI US 2001-754809 A1 20010103 (9)
RLI Division of Ser. No. US 1998-221753, filed on 28 Dec 1998, PATENTED
Division of Ser. No. US 1996-715131, filed on 17 Sep 1996, PATENTED
Continuation-in-part of Ser. No. US 1994-222179, filed on 4 Apr 1994, ABANDONED Continuation-in-part of Ser. No. US 1991-791377, filed on 17 Sep 1991, PATENTED
DT Utility
FS APPLICATION
LREP Shari J. Corin, Ph.D., NEEDLE & ROSENBERG, P.C., The Candler Building, Suite 1200, 127 Peachtree Street, N.E., Atlanta, GA, 30303-1811
CLMN Number of Claims: 26
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 1946
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides a nucleic acid encoding the 37-kDa protein from

Streptococcus pneumoniae. Also provided are isolated nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. The invention also provides purified polypeptides encoded by the nucleic acid encoding the 37-kDa protein from and the nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. Also provided are antibodies which selectively binds the polypeptides encoded by the nucleic acid encoding the 37-kDa protein and the nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. Also provided are vaccines comprising immunogenic polypeptides encoded by the nucleic acid encoding the 37-kDa protein and the nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. Further provided is a method of detecting the presence of Streptococcus pneumoniae in a sample comprising the steps of contacting a sample suspected of containing Streptococcus pneumoniae with nucleic acid primers capable of hybridizing to a nucleic acid comprising a portion of the nucleic acid encoding the 37-kDa protein, amplifying the nucleic acid and detecting the presence of an amplification product, the presence of the amplification product indicating the presence of Streptococcus pneumoniae in the sample. Further provided are methods of detecting the presence of Streptococcus pneumoniae in a sample using antibodies or antigens, methods of preventing and treating Streptococcus pneumoniae infection in a subject.

L13 ANSWER 22 OF 40 USPATFULL on STN
AN 2003:85835 USPATFULL
TI **PNEUMOCOCCAL** SURFACE PROTEIN C (PSPC), EPITOPIC REGIONS AND STRAIN SELECTION THEREOF, AND USES THEREFOR
IN BRILES, DAVID E., BIRMINGHAM, AL, UNITED STATES
HOLLINGSHEAD, SUSAN K., BIRMINGHAM, AL, UNITED STATES
BROOKS-WALTER, ALEXIS, BIRMINGHAM, AL, UNITED STATES
PA NIXON PEABODY LLP (U.S. corporation)
PI US 2003059438 A1 20030327
AI US 1999-298523 A1 19990423 (9)
PRAI US 1998-82728P 19980423 (60)
DT Utility
FS APPLICATION
LREP Michael L Goldman, NIXON PEABODY LLP, Clinton Square, P O Box 31051, Rochester, NY, 14603
CLMN Number of Claims: 27
ECL Exemplary Claim: 1
DRWN 50 Drawing Page(s)
LN.CNT 1957
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed and claimed are: epitopic regions of **Pneumococcal** Surface Protein C or "PspC", different clades of PspC, isolated and/or purified nucleic acid molecules such as DNA encoding a fragment or portion of PspC such as an epitopic region of PspC or at least one epitope of PspC, uses for such nucleic acid molecules, e.g., to detect the presence of PspC or of S. pneumoniae by detecting a nucleic acid molecule therefor in a sample such as by amplification and/or a polymerase chain reaction, vectors or plasmids which contain and/or express such nucleic acid molecles, e.g., in vitro or in vivo, immunological, immunogenic or vaccine compositions including at least one PspC and/or a portion thereof (such as at least one epitopic region of at least one PspC and/or at least one polypeptide encoding at least one epitope of at least one PspC), either alone or in further combination with at least one second **pneumococcal** antigen, such as at least one different PspC and/or a fragment thereof and/or at least one **PspA** and/or at least one epitopic region of at least one **PspA** and/or at least one polypeptide including at least one epitope of **PspA**. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approximately the same amounts, as **PspA** . Thus, the invention further provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compositions.

L13 ANSWER 23 OF 40 USPATFULL on STN

AN 2003:29853 USPATFULL
TI Use of coiled-coil structural scaffold to generate structure-specific peptides
IN Houston, Michael E., Edmonton, CANADA
Hodges, Robert, Denver, CO, UNITED STATES
PI US 2003021795 A1 20030130
AI US 2001-882774 A1 20010614 (9)
PRAI US 2000-211892P 20000614 (60)
US 2000-213387P 20000623 (60)
DT Utility
FS APPLICATION
LREP BURNS DOANE SWECKER & MATHIS L L P, POST OFFICE BOX 1404, ALEXANDRIA, VA, 22313-1404
CLMN Number of Claims: 57
ECL Exemplary Claim: 1
DRWN 8 Drawing Page(s)
LN.CNT 1934
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention relates to the use of a coiled-coil structural scaffold to generate structure-specific peptides, including synthetic peptides derived from naturally occurring proteins of various origin. The structure of the synthetic peptides utilizes a scaffold of heptad repeat units into which epitopes from coiled-coil regions of native proteins are spliced. In particular, the synthetic peptides may be based on microbial proteins, especially surface proteins, which occur naturally in the coiled-coil form such as **pneumococcal** surface proteins A and C. The synthetic peptides are immunogenic and can be used to elicit an immune response in an animal. Accordingly, they are useful as vaccines or to stimulate antibody production or cell-mediated immunity to the naturally occurring protein.

L13 ANSWER 24 OF 40 USPATFULL on STN
AN 2002:346772 USPATFULL
TI **Pneumococcal** surface proteins and uses thereof
IN Briles, David E., Birmingham, AL, United States
McDaniel, Larry S., Ridgland, MS, United States
Swiatlo, Edwin, Birmingham, AL, United States
Yother, Janet, Birmingham, AL, United States
Crain, Marilyn J., Birmingham, AL, United States
Hollingshead, Susan, Birmingham, AL, United States
Tart, Rebecca, Benson, NC, United States
Brooks-Walter, Alexis, Birmingham, AL, United States
PA University of Alabama at Birmingham, Birmingham, AL, United States (U.S. corporation)
PI US 6500613 B1 20021231
AI US 1996-714741 19960916 (8)
RLI Continuation-in-part of Ser. No. US 1995-529055, filed on 15 Sep 1995
DT Utility
FS GRANTED
EXNAM Primary Examiner: Housel, James C.; Assistant Examiner: Swartz, Rodney P.
LREP Frommer Lawrence & Haug LLP, Frommer, William S., Kowalski, Thomas J.
CLMN Number of Claims: 9
ECL Exemplary Claim: 1
DRWN 71 Drawing Figure(s); 69 Drawing Page(s)
LN.CNT 7865
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to **pneumococcal** genes, portions thereof, expression products therefrom and uses of such genes, portions and products; especially to genes of Streptococcus pneumoniae, e.g., the gene encoding **pneumococcal** surface protein A (**PspA**), i.e., the **pspA** gene, the gene encoding **pneumococcal** surface protein A-like proteins, such as **pspA**-like genes, e.g., the gene encoding **pneumococcal** surface protein C (PspC), i.e., the pspC gene, portions of such genes, expression products therefrom, and the uses of such genes, portions thereof and expression products therefrom.

L13 ANSWER 25 OF 40 USPATFULL on STN

AN 2001:139158 USPATFULL
TI **Pneumococcal** surface protein C (PspC), epitopic regions and strain selection thereof, and uses therefor
IN Briles, David E., Birmingham, AL, United States
Hollingshead, Susan K., Birmingham, AL, United States
Brooks-Walter, Alexis, Birmingham, AL, United States
PI US 2001016200 A1 20010823
AI US 2000-748875 A1 20001226 (9)
RLI Division of Ser. No. US 1999-298523, filed on 23 Apr 1999, PENDING
PRAI US 1998-82728P 19980423 (60)
DT Utility
FS APPLICATION
LREP FROMMER LAWRENCE & HAUG, 745 FIFTH AVENUE, NEW YORK, NY, 10151
CLMN Number of Claims: 27
ECL Exemplary Claim: 1
DRWN 50 Drawing Page(s)
LN.CNT 1911
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed and claimed are: epitopic regions of **Pneumococcal** Surface Protein C or "PspC", different clades of PspC, isolated and/or purified nucleic acid molecules such as DNA encoding a fragment or portion of PspC such as an epitopic region of PspC or at least one epitope of PspC, uses for such nucleic acid molecules, e.g., to detect the presence of PspC or of S. pneumoniae by detecting a nucleic acid molecule therefor in a sample such as by amplification and/or a polymerase chain reaction, vectors or plasmids which contain and/or express such nucleic acid molecles, e.g., in vitro or in vivo, immunological, immunogenic or vaccine compositions including at least one PspC and/or a portion thereof (such as at least one epitopic region of at least one PspC and/or at least one polypeptide encoding at least one epitope of at least one PspC), either alone or in further combination with at least one second **pneumococcal** antigen, such as at least one different PspC and/or a fragment thereof and/or at least one **PspA** and/or at least one epitopic region of at least one **PspA** and/or at least one polypeptide including at least one epitope of **PspA**. PspC or a fragment thereof, and thus a composition including PspC or a fragment thereof, can be administered by the same routes, and in approximately the same amounts, as **PspA** . Thus, the invention further provides methods for administering PspC or a fragment thereof, as well as uses of PspC or a fragment thereof to formulate such compositions.

L13 ANSWER 26 OF 40 USPATFULL on STN
AN 2001:55462 USPATFULL
TI Streptococcus pneumoniae 37-kDa surface adhesin a protein
IN Sampson, Jacquelyn S., College Park, GA, United States
Russell, Harold, Atlanta, GA, United States
Tharpe, Jean A., Lithonia, GA, United States
Ades, Edwin W., Atlanta, GA, United States
Carlone, George M., Stone Mountain, GA, United States
PA The United States of America as represented by the Department of Health and Human Services, Washington, DC, United States (U.S. government)
PI US 6217884 B1 20010417
AI US 1998-221753 19981228 (9)
RLI Division of Ser. No. US 1996-715131, filed on 17 Sep 1996, now patented, Pat. No. US 5854416 Continuation-in-part of Ser. No. US 1994-222179, filed on 4 Apr 1994, now abandoned Continuation-in-part of Ser. No. US 1991-791377, filed on 17 Sep 1991, now patented, Pat. No. US 5422427
DT Utility
FS Granted
EXNAM Primary Examiner: Graser, Jennifer
LREP Needle & Rosenberg, P.C.
CLMN Number of Claims: 3
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 1833
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides a nucleic acid encoding the 37-kDa protein from Streptococcus pneumoniae. Also provided are isolated nucleic acids

comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. The invention also provides purified polypeptides encoded by the nucleic acid encoding the 37-kDa protein from and the nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. Also provided are antibodies which selectively binds the polypeptides encoded by the nucleic acid encoding the 37-kDa protein and the nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. Also provided are vaccines comprising immunogenic polypeptides encoded by the nucleic acid encoding the 37-kDa protein and the nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. Further provided is a method of detecting the presence of Streptococcus pneumoniae in a sample comprising the steps of contacting a sample suspected of containing Streptococcus pneumoniae with nucleic acid primers capable of hybridizing to a nucleic acid comprising a portion of the nucleic acid encoding the 37-kDa protein, amplifying the nucleic acid and detecting the presence of an amplification product, the presence of the amplification product indicating the presence of Streptococcus pneumoniae in the sample. Further provided are methods of detecting the presence of Streptococcus pneumoniae in a sample using antibodies or antigens, methods of preventing and treating Streptococcus pneumoniae infection in a subject.

L13 ANSWER 27 OF 40 USPATFULL on STN
AN 2000:37396 USPATFULL
TI immunogenic compositions for mucosal administration of **pneumococcal** surface protein A (**PspA**)
IN Briles, David E., Birmingham, AL, United States
Wu, Hong-Yin, Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 6042838 20000328
AI US 1995-446201 19950519 (8)
RLI Continuation-in-part of Ser. No. US 1994-312949, filed on 30 Sep 1994 which is a continuation-in-part of Ser. No. US 1994-246636, filed on 20 May 1994 which is a continuation-in-part of Ser. No. US 1993-48896, filed on 20 Apr 1993, now abandoned which is a continuation-in-part of Ser. No. US 1992-835698, filed on 12 Feb 1992, now abandoned which is a continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Housel, James C.; Assistant Examiner: Swartz, Rodney P.
LREP Frommer Lawerence & Haug LLP, Frommer, William S., Kowalski, Thomas J.
CLMN Number of Claims: 8
ECL Exemplary Claim: 1
DRWN 10 Drawing Figure(s); 8 Drawing Page(s)
LN.CNT 2307
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Mucosal administration, particularly intranasally, of killed whole **pneumococci**, lysate of **pneumococci** and isolated and purified **PspA**, as well as immunogenic fragments thereof, particularly when administered with cholera toxin B subunit, provides protection in animals against **pneumococcal** colonization and systemic infection. The ability to elicit protection against **pneumococcal** colonization in a host prevents carriage among immunized individuals, which can lead to elimination of disease from the population as a whole.

L13 ANSWER 28 OF 40 USPATFULL on STN
AN 2000:21228 USPATFULL
TI Mucosal administration of **pneumococcal** antigens
IN Briles, David E., Birmingham, AL, United States
Wu, Hong-Yin, Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 6027734 20000222
AI US 1994-312949 19940930 (8)

RLI Continuation-in-part of Ser. No. US 1994-246636, filed on 20 May 1994 which is a continuation-in-part of Ser. No. US 1993-48896, filed on 20 Apr 1993 which is a continuation-in-part of Ser. No. US 1992-835698, filed on 12 Feb 1992 which is a continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Housel, James C.; Assistant Examiner: Swartz, Rodney P.
LREP Frommer Lawrence & Haug LLP, Frommer, William S., Kowalski, Thomas J.
CLMN Number of Claims: 9
ECL Exemplary Claim: 1
DRWN 7 Drawing Figure(s); 8 Drawing Page(s)
LN.CNT 1919
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Mucosal administration, particularly intranasally, of killed whole **pneumococci**, lysate of **pneumococci** and isolated and purified **PspA**, as well as immunogenic fragments thereof, particularly when administered with cholera toxin B subunit, provides protection in animals against **pneumococcal** colonization and systemic infection. The ability to elicit protection against **pneumococcal** colonization in a host prevents carriage among immunized individuals, which can lead to elimination of disease from the population as a whole.

L13 ANSWER 29 OF 40 USPATFULL on STN
AN 1999:141316 USPATFULL
TI Epitopic regions of **pneumococcal** surface protein A
IN Briles, David E., Birmingham, AL, United States
Yother, Janet L., Birmingham, AL, United States
McDaniel, Larry S., Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 5980909 19991109
AI US 1994-319795 19941007 (8)
RLI Continuation-in-part of Ser. No. US 1994-246636, filed on 20 May 1994 which is a continuation-in-part of Ser. No. US 1993-48896, filed on 20 Apr 1993, now abandoned which is a continuation-in-part of Ser. No. US 1992-835698, filed on 12 Feb 1992, now abandoned which is a continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Chin, Christopher L.; Assistant Examiner: Graser, Jennifer
LREP Frommer Lawerence & Haug LLP, Frommer, William S., Kowalski, Thomas J.
CLMN Number of Claims: 13
ECL Exemplary Claim: 1
DRWN 7 Drawing Figure(s); 7 Drawing Page(s)
LN.CNT 1580
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Regions of the **PspA** protein of the Rx1 strain of Streptococcus pneumoniae have been identified as containing protection-eliciting epitopes which are cross-reactive with PspAs of other S. pneumoniae strains and which is cross-protective. One region comprises the 68-amino acid sequence extending from amino acid residues 192 to 260 of the Rx1 **PspA**, another region comprises the C-terminal amino acid sequence extending from amino acid residues 293 to 588 of the Rx1 **PspA**, while a third region comprises the N-terminal amino acid sequence extending from amino acid residues 1 to 115 of the Rx1 **PspA**.

L13 ANSWER 30 OF 40 USPATFULL on STN
AN 1999:124736 USPATFULL
TI DNA encoding a truncated pneumogoccal surface protein (**PspA**)
IN Briles, David E., Birmingham, AL, United States
Yother, Janet L., Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)

PI US 5965400 19991012
AI US 1994-247491 19940523 (8)
RLI Continuation of Ser. No. US 1992-835698, filed on 12 Feb 1992, now abandoned which is a continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Caputa, Anthony C.
LREP Curtis, Morris & Safford P.C.
CLMN Number of Claims: 13
ECL Exemplary Claim: 4,7
DRWN 11 Drawing Figure(s); 10 Drawing Page(s)
LN.CNT 1152
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A purified **pneumococcal** surface protein A (**PspA**) comprises a truncated form of the **PspA** protein which is immunoprotective and contains the protective epitopes of **PspA**. The **PspA** protein is soluble in physiologic solution and lacks at least the cell membrane anchor region of the whole protein. The protein is formed by insertion-duplication of mutagenesis of S. pneumoniae with **pspA** gene and expression of the truncated protein into the growth medium.

L13 ANSWER 31 OF 40 USPATFULL on STN
AN 1999:124478 USPATFULL
TI Epitopic regions of **pneumococcal** surface protein a
IN Briles, David E., Birmingham, AL, United States
Yother, Janet L., Birmingham, AL, United States
McDaniel, Larry S., Birmingham, AL, United States
Wu, Hong-Yin, Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 5965141 19991012
AI US 1994-246636 19940520 (8)
RLI Continuation-in-part of Ser. No. US 1993-48896, filed on 20 Apr 1993, now abandoned which is a continuation-in-part of Ser. No. US 1992-835698, filed on 12 Feb 1992, now abandoned which is a continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Housel, James C.; Assistant Examiner: Graser, Jennifer
LREP Frommer Lawrence & Haug LLP, Frommer, William S., Kowalski, Thomas J.
CLMN Number of Claims: 35
ECL Exemplary Claim: 1
DRWN 6 Drawing Figure(s); 6 Drawing Page(s)
LN.CNT 1445
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A region of the **PspA** protein of the Rx1 strain of Streptococcus pneumoniae has been identified as containing protection-eliciting epitopes which are cross-reactive with PspAs of other S. pneumoniae strains and which is cross-protective. The region comprises the 68-amino acid sequence extending from amino acid residues 192 to 260 of the Rx1 **PspA** strain.

L13 ANSWER 32 OF 40 USPATFULL on STN
AN 1999:106576 USPATFULL
TI Streptococcus pneumoniae capsular polysaccharide genes and flanking regions
IN Yother, Janet, Birmingham, AL, United States
Dillard, Joseph, Hinsdale, IL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 5948900 19990907
AI US 1997-867030 19970602 (8)
RLI Continuation-in-part of Ser. No. US 1994-243546, filed on 16 May 1994, now abandoned
DT Utility
FS Granted

EXNAM Primary Examiner: Sisson, Bradley L.
LREP Adler, Benjamin Aaron
CLMN Number of Claims: 8
ECL Exemplary Claim: 1
DRWN 29 Drawing Figure(s); 39 Drawing Page(s)
LN.CNT 4586
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed is the identification, cloning and sequencing of flanking DNA regions common to all polysaccharide capsule types in Streptococcus pneumoniae. Also disclosed are particular type-specific genes and gene products that direct the formation of the Streptococcus pneumoniae serotype-specific polysaccharide capsule. Methods are provided for detecting Streptococcus pneumoniae. and for constructin gene cassettes that may be transferred as a unit during transformation and used to direct the expression of specific serotyes of Streptococcus pneumoniae capsules.

L13 ANSWER 33 OF 40 USPATFULL on STN
AN 1999:21926 USPATFULL
TI Immunoassay comprising a truncated **pneumococcal** surface protein A (**PspA**)
IN Briles, David E., Birmingham, AL, United States
Yother, Janet L., Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 5871943 19990216
AI US 1995-468718 19950606 (8)
RLI Continuation of Ser. No. US 1993-72068, filed on 3 Jun 1993, now abandoned which is a division of Ser. No. US 1992-835698, filed on 12 Feb 1992, now abandoned which is a continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Caputa, Anthony C.
LREP Frommer Lawrence & Haug LLP, Frommer, William S., Kowalski, Thomas J.
CLMN Number of Claims: 4
ECL Exemplary Claim: 1
DRWN 10 Drawing Figure(s); 8 Drawing Page(s)
LN.CNT 972
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A purified **pneumococcal** surface protein A (**PspA**) comprises a truncated form of the **PspA** protein which is immunoprotective and contains the protective epitopes of **PspA**. The **PspA** protein is soluble in physiologic solution and lacks at least the cell membrane anchor region of the whole protein. The protein is formed by insertion-duplication of mutagenesis of S. pneumoniae with **pspA** gene and expression of the truncated protein into the growth medium.

L13 ANSWER 34 OF 40 USPATFULL on STN
AN 1999:1507 USPATFULL
TI Structural gene of **pneumococcal** protein
IN Briles, David E., Birmingham, AL, United States
Yother, Janet L., Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 5856170 19990105
AI US 1995-467852 19950606 (8)
RLI Continuation of Ser. No. US 1994-247491, filed on 23 May 1994 which is a continuation of Ser. No. US 1992-835698, filed on 12 Feb 1992, now abandoned which is a continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Houtteman, Scott W.
LREP Frommer Lawrence & Haug LLP, Frommer, William S., Kowalski, Thomas J.
CLMN Number of Claims: 24
ECL Exemplary Claim: 1
DRWN 11 Drawing Figure(s); 10 Drawing Page(s)

LN.CNT 1127
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A purified **pneumococcal** surface protein A (**PspA**) comprises a truncated form of the **PspA** protein which is immunoprotective and contains the protective epitopes of **PspA**. The **PspA** protein is soluble in physiologic solution and lacks at least the cell membrane anchor region of the whole protein. The protein is formed by insertion-duplication of mutagenesis of S. pneumoniae with **pspA** gene and expression of the truncated protein into the growth medium.

L13 ANSWER 35 OF 40 USPATFULL on STN
AN 1998:162673 USPATFULL
TI Streptococcus pneumoniae 37-KDA surface adhesin a protein and nucleic acids coding therefor
IN Sampson, Jacquelyn S., College Park, GA, United States
Russell, Harold, Atlanta, GA, United States
Tharpe, Jean A., Lithonia, GA, United States
Ades, Edwin W., Atlanta, GA, United States
Carlone, George M., Stone Mountain, GA, United States
PA The United States of America as represented by the Department of Health and Human Services, Washington, DC, United States (U.S. government)
PI US 5854416 19981229
AI US 1996-715131 19960917 (8)
RLI Continuation-in-part of Ser. No. US 1994-222179, filed on 4 Apr 1994, now abandoned which is a continuation-in-part of Ser. No. US 1991-791377, filed on 17 Sep 1991, now patented, Pat. No. US 5422427
DT Utility
FS Granted
EXNAM Primary Examiner: Housel, James C.; Assistant Examiner: Shaver, Jennifer
LREP Fitch, Even, Tabin & Flannery
CLMN Number of Claims: 9
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 1873
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides a nucleic acid encoding the 37-kDa protein from Streptococcus pneumoniae. Also provided are isolated nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. The invention also provides purified polypeptides encoded by the nucleic acid encoding the 37-kDa protein from and the nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. Also provided are antibodies which selectively binds the polypeptides encoded by the nucleic acid encoding the 37-kDa protein and the nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. Also provided are vaccines comprising immunogenic polypeptides encoded by the nucleic acid encoding the 37-kDa protein and the nucleic acids comprising a unique fragment of at least 10 nucleotides of the 37-kDa protein. Further provided is a method of detecting the presence of Streptococcus pneumoniae in a sample comprising the steps of contacting a sample suspected of containing Streptococcus pneumoniae with nucleic acid primers capable of hybridizing to a nucleic acid comprising a portion of the nucleic acid encoding the 37-kDa protein, amplifying the nucleic acid and detecting the presence of an amplification product, the presence of the amplification product indicating the presence of Streptococcus pneumoniae in the sample. Further provided are methods of detecting the presence of Streptococcus pneumoniae in a sample using antibodies or antigens, methods of preventing and treating Streptococcus pneumoniae infection in a subject.

L13 ANSWER 36 OF 40 USPATFULL on STN
AN 1998:108032 USPATFULL
TI Truncated **PSPA** lacking a functional cell membrane anchor region
IN Briles, David E., Birmingham, AL, United States
Yother, Janet L., Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)

PI US 5804193 19980908
AI US 1994-214222 19940317 (8)
RLI Division of Ser. No. US 1992-835698, filed on 12 Feb 1992, now abandoned which is a continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Caputa, Anthony C.
LREP Frommer Lawrence & Haug, LLP, Frommer, William S., Kowalski, Thomas J.
CLMN Number of Claims: 10
ECL Exemplary Claim: 1,5
DRWN 10 Drawing Figure(s); 8 Drawing Page(s)
LN.CNT 980
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A purified **pneumococcal** surface protein A (**PspA**) comprises a truncated form of the **PspA** protein which is immunoprotective and contains the protective epitopes of **PspA**. The **PspA** protein is soluble in physiologic solution and lacks at least the cell membrane anchor region of the whole protein. The protein is formed by insertion-duplication of mutagenesis of S. pneumoniae with **pspA** gene and expression of the truncated protein into the growth medium.

L13 ANSWER 37 OF 40 USPATFULL on STN
AN 1998:54710 USPATFULL
TI Structural gene of **pneumococcal** protein
IN Briles, David E., Birmingham, AL, United States
Yother, Janet L., Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 5753463 19980519
AI US 1995-469434 19950606 (8)
RLI Continuation of Ser. No. US 1993-72065, filed on 3 Jun 1993, now abandoned which is a division of Ser. No. US 1992-835698, filed on 12 Feb 1992, now abandoned which is a continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Caputa, Anthony C.
LREP Curtis Morris & Safford, P.C.
CLMN Number of Claims: 7
ECL Exemplary Claim: 1
DRWN 10 Drawing Figure(s); 8 Drawing Page(s)
LN.CNT 965
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A purified **pneumococcal** surface protein A (**PspA**) comprises a truncated form of the **PspA** protein which is immunoprotective and contains the protective epitopes of **PspA**. The **PspA** protein is soluble in physiologic solution and lacks at least the cell membrane anchor region of the whole protein. The protein is formed by insertion-duplication of mutagenesis of S. pneumoniae with **pspA** gene and expression of the truncated protein into the growth medium.

L13 ANSWER 38 OF 40 USPATFULL on STN
AN 1998:27772 USPATFULL
TI Structural gene of **pneumococcal** protein
IN Briles, David E., Birmingham, AL, United States
Yother, Janet L., Birmingham, AL, United States
PA University of Alabama at Birmingham Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 5728387 19980317
AI US 1994-214164 19940317 (8)
RLI Continuation of Ser. No. US 1991-656773, filed on 15 Feb 1991, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Smith, Lynette F.
LREP Curtis Morris & Safford P.C.

CLMN Number of Claims: 9
ECL Exemplary Claim: 1
DRWN 4 Drawing Figure(s); 9 Drawing Page(s)
LN.CNT 579
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A purified **pneumococcal** surface protein A (**PspA**) comprises a truncated form of the **PspA** protein which is immunoprotective and contains the protective epitopes of **PspA**. The **PspA** protein is soluble in physiologic solution and lacks at least the cell membrane anchor region of the whole protein. The protein is formed by insertion-duplication of mutagenesis of S. pneumoniae with **pspA** gene and expression of the truncated protein into the growth medium.

L13 ANSWER 39 OF 40 USPATFULL on STN
AN 97:96956 USPATFULL
TI Epitopic regions of **pneumococcal** surface protein A
IN Briles, David E., Birmingham, AL, United States
Yother, Janet L., Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 5679768 19971021
AI US 1995-465746 19950606 (8)
RLI Continuation of Ser. No. US 1993-48896, filed on 20 Apr 1993, now abandoned which is a continuation-in-part of Ser. No. US 1992-835698, filed on 12 Feb 1992, now abandoned which is a continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Caputa, Anthony C.
LREP Curtis Morris & Safford P C
CLMN Number of Claims: 11
ECL Exemplary Claim: 4
DRWN 6 Drawing Figure(s); 6 Drawing Page(s)
LN.CNT 905
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A region of the **PspA** protein of the Rx1 strain of Streptococus pneumoniae has been identified as containing protection-eliciting epitopes which are cross-reactive with PspAs of other S.pneumoniae strains. The region comprises the 68-amino acid sequence extending from amino acid residues 192 to 260 of the Rx1 **PspA** strain.

L13 ANSWER 40 OF 40 USPATFULL on STN
AN 95:112612 USPATFULL
TI Structural gene of **pneumococcal** protein
IN Briles, David E., Birmingham, AL, United States
Yother, Janet L., Birmingham, AL, United States
McDaniel, Larry S., Birmingham, AL, United States
PA UAB Research Foundation, Birmingham, AL, United States (U.S. corporation)
PI US 5476929 19951219
AI US 1993-72070 19930603 (8)
RLI Division of Ser. No. US 1992-835698, filed on 12 Feb 1992 which is a continuation-in-part of Ser. No. US 1991-656773, filed on 15 Feb 1991, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Jones, W. Gary; Assistant Examiner: Houtteman, Scott
LREP Curtis, Morris & Safford
CLMN Number of Claims: 7
ECL Exemplary Claim: 1
DRWN 10 Drawing Figure(s); 8 Drawing Page(s)
LN.CNT 974
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A purified **pneumococcal** surface protein A (**PspA**) comprises a truncated form of the **PspA** protein which is immunoprotective and contains the protective epitopes of **PspA**. The **PspA** protein is soluble in physiologic solution and lacks at least the cell membrane anchor region of the whole protein. The

protein is formed by insertion-duplication of mutagenesis of S. pneumoniae with **pspA** gene and expression of the truncated protein into the growth medium.